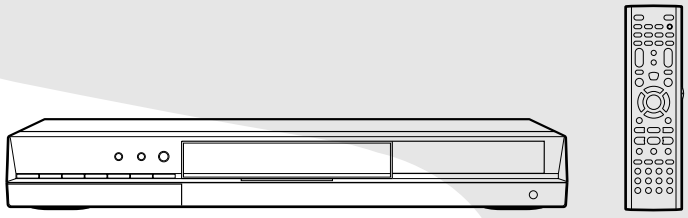
TOSHIBA

FILE NO. 810-200548

SERVICE MANUAL

DVD VIDEO RECORDER

D-R350SB



May, 2005 Ⓢ

LASER BEAM CAUTION LABEL

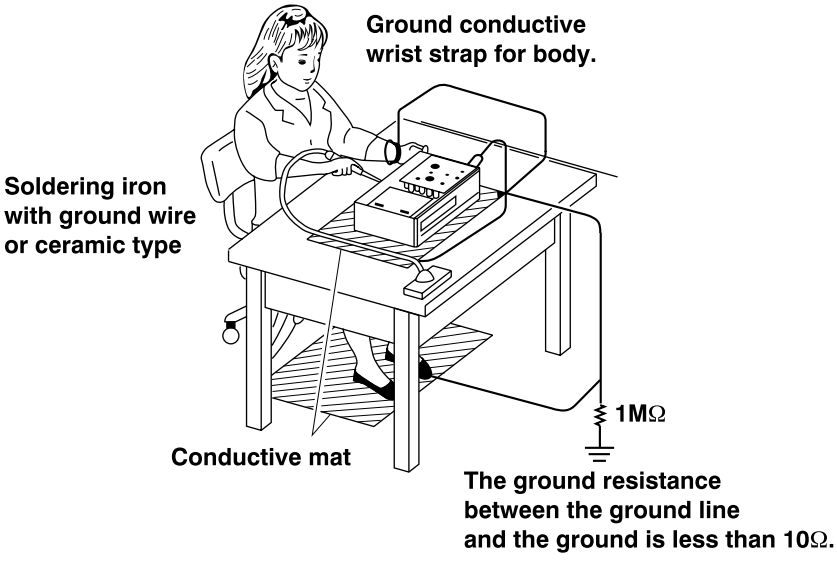
When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of a laser may be received.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electricity.

Although it operates properly after replacement, if it was subject to electrostatic discharge during replacement, its life might be shortened. When replacing, use a conductive mat, soldering iron with ground wire, etc. to protect the laser diode from damage by static electricity.

And also, the LSI and IC are same as above.



- Manufactured under license from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories.
- “DTS” and “DTS Digital Out” are trademarks of Digital Theater Systems, Inc.
- Manufactured under license from QSound Labs, Inc. U.S. patent Nos. 5,105,462, 5,208,860 and 5,440,638 and various foreign counterpart. Copyright QSound Labs, Inc. 1998-2002. QXpander™ is a trademark of QSound Labs, Inc. All rights reserved.
- VIDEO Plus+ and PlusCode are registered trademarks of Gemstar Development Corporation. The VIDEO Plus+ system is manufactured under license from Gemstar Development Corporation.

CONTENTS

SECTION 1
GENERAL DESCRIPTIONS

SECTION 2
PART REPLACEMENT AND ADJUSTMENT PROCEDURES

SECTION 3
SERVICING DIAGRAMS

SECTION 4
PARTS LIST

SECTION 1
GENERAL DESCRIPTIONS

1. OPERATING INSTRUCTIONS

Please refer to the owner's manual about the contents.

2. LOCATION OF MAIN PARTS

2-1. Location of Main Parts

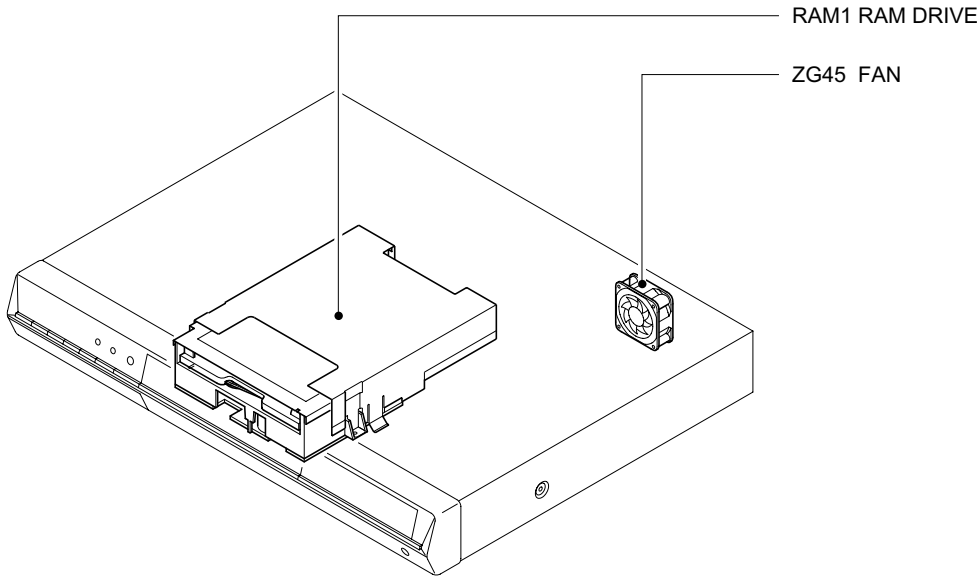


Fig. 1-2-1

2-2. Location of PC Boards

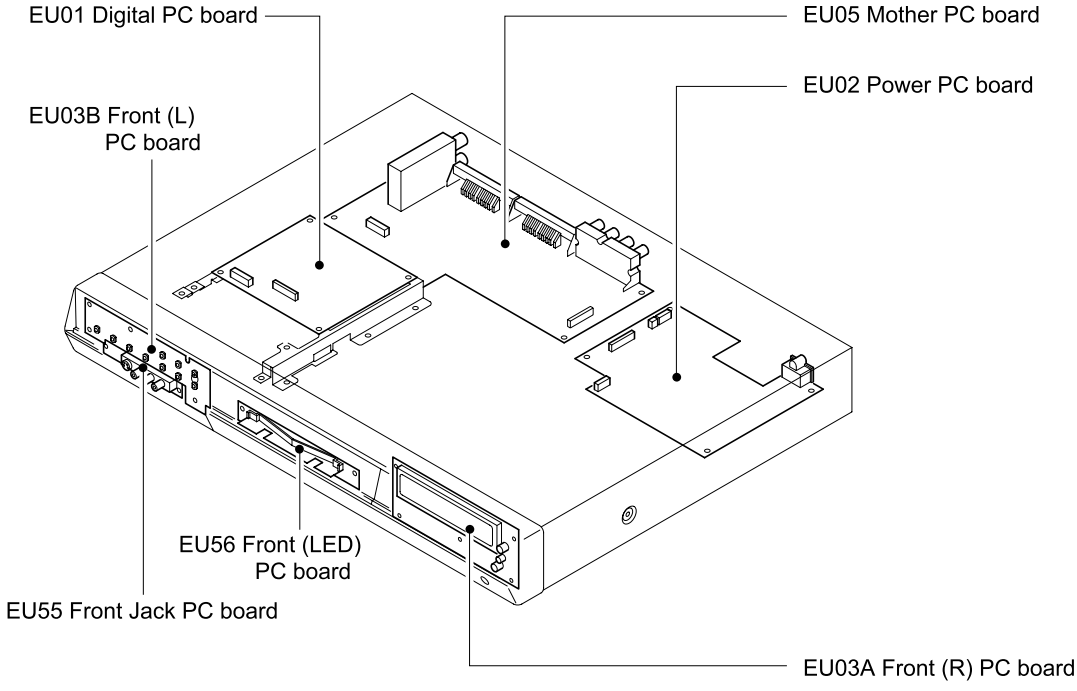


Fig. 1-2-2

SECTION 2
PART REPLACEMENT AND ADJUSTMENT PROCEDURES

CAUTIONS BEFORE STARTING PART REPLACEMENT

Electronic parts are susceptible to static electricity and may easily damaged, so do not forget to ground as required. Many screws are used inside the unit. To prevent the screws from missing or dropping, etc. always use a magnetized screwdriver in servicing. Several kinds of screws are used and some of them need special cautions. That is, take care of the tapping screws securing molded parts and fine pitch screws used to secure metal parts. If they are used improperly, the screw holes will be easily damaged and the parts can not be fixed.

1. REPLACEMENT OF MECHANICAL PARTS

1-1. Cabinet Replacement

1-1-1. Top Cover

1. Remove seven screws (1), then remove the top cover (2).

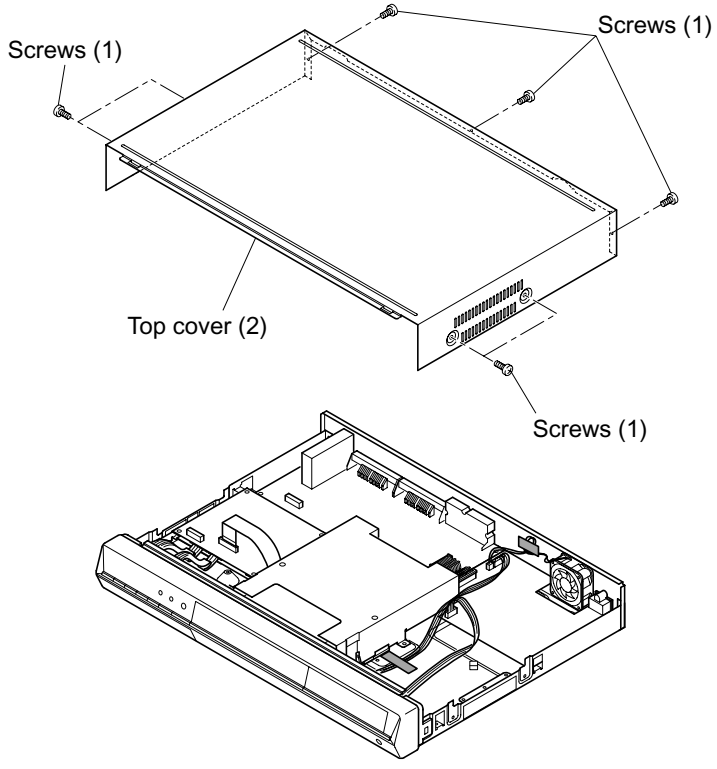


Fig. 2-1-1

1-1-2. Front Panel

1. Remove the top cover. (Refer to item 1-1-1.)
2. Remove the Digital PC board. (Refer to item 1-2-1.)
3. Disconnect three connectors (1).
4. Remove two screws (2) and four claws, then remove the front panel (3).

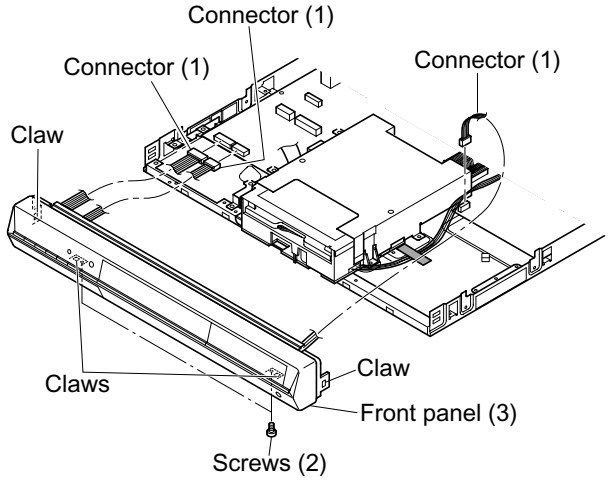


Fig. 2-1-2

1-1-3. RAM Drive

1. Remove the front panel. (Refer to item 1-1-2.)
2. Peel off the tape (1).
3. Disconnect the flexible cable (2) and connector (3).
4. Remove three screws (4) and three screws (5), then remove the RAM drive (6).
5. Remove the shield cover (7).

Note:

- After replacing, attach the tape (1) to its original position.

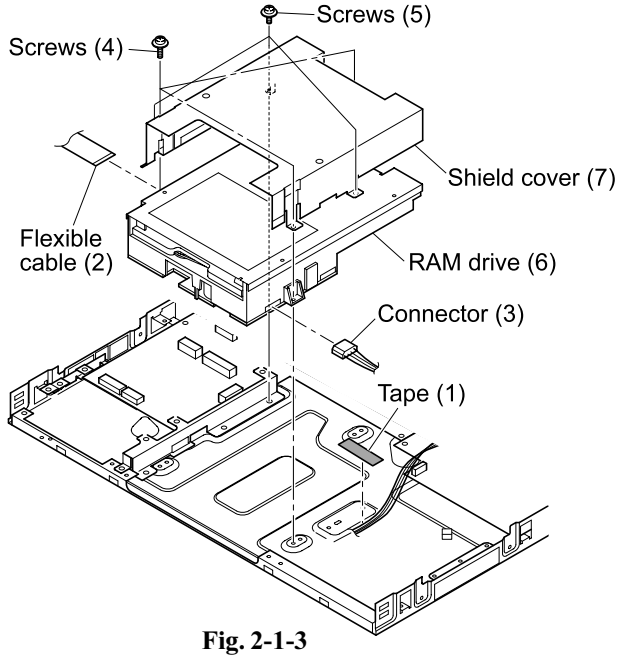


Fig. 2-1-3

1-1-4. Rear Panel

1. Remove the top cover. (Refer to item 1-1-1.)
2. Peel of the tape (1).
3. Remove two screws (2) and seven screws (3).
4. Remove two claws, then remove the rear panel (4).
5. Remove two screws (5), then remove the fan (6).

Note:

- After replacing, attach the tape (1) to its original position.

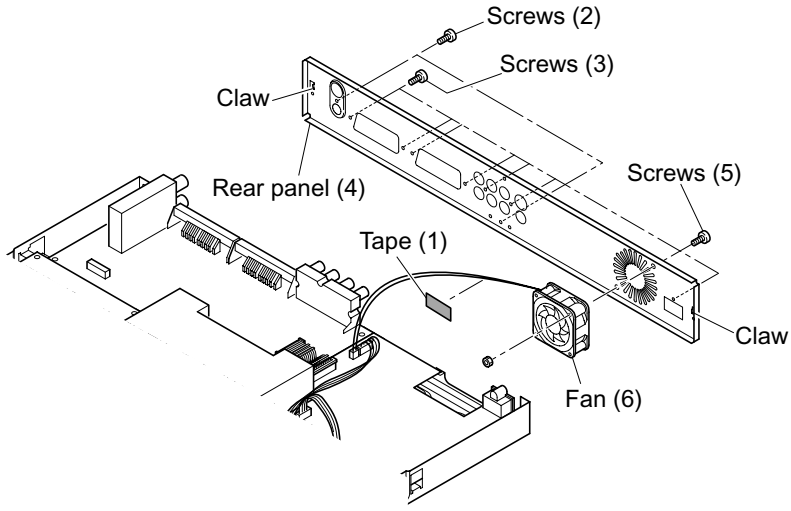


Fig. 2-1-4

1-1-5. Fan

1. Remove the top cover. (Refer to item 1-1-1.)
2. Peel off the tape (1).
3. Disconnect the connector (2).
4. Remove two screws (3), then remove the fan (4).

Note:

- After replacing, attach the tape (1) to its original position.

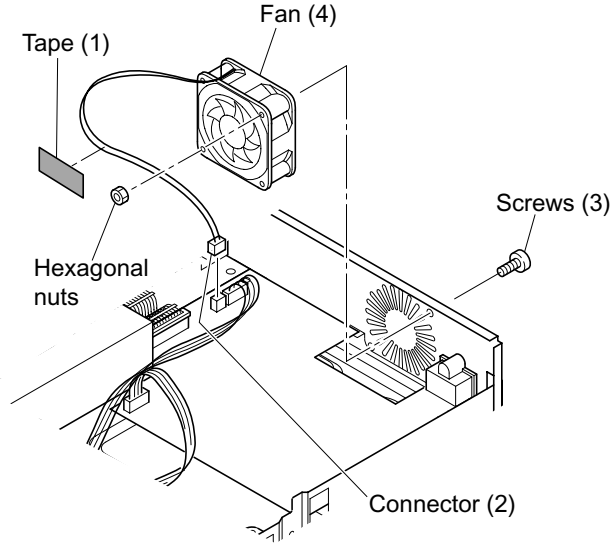


Fig. 2-1-5

1-2. PC Board Replacement

1-2-1. Digital PC Board

1. Remove the top cover. (Refer to item 1-1-1.)
2. Disconnect the flexible cable (1).
3. Remove four screws (2), then remove the Digital PC board (3).

Note:

- The Digital PC board (3) is connected to the Mother PC board (4) by three connectors (5). Take notice when removing.

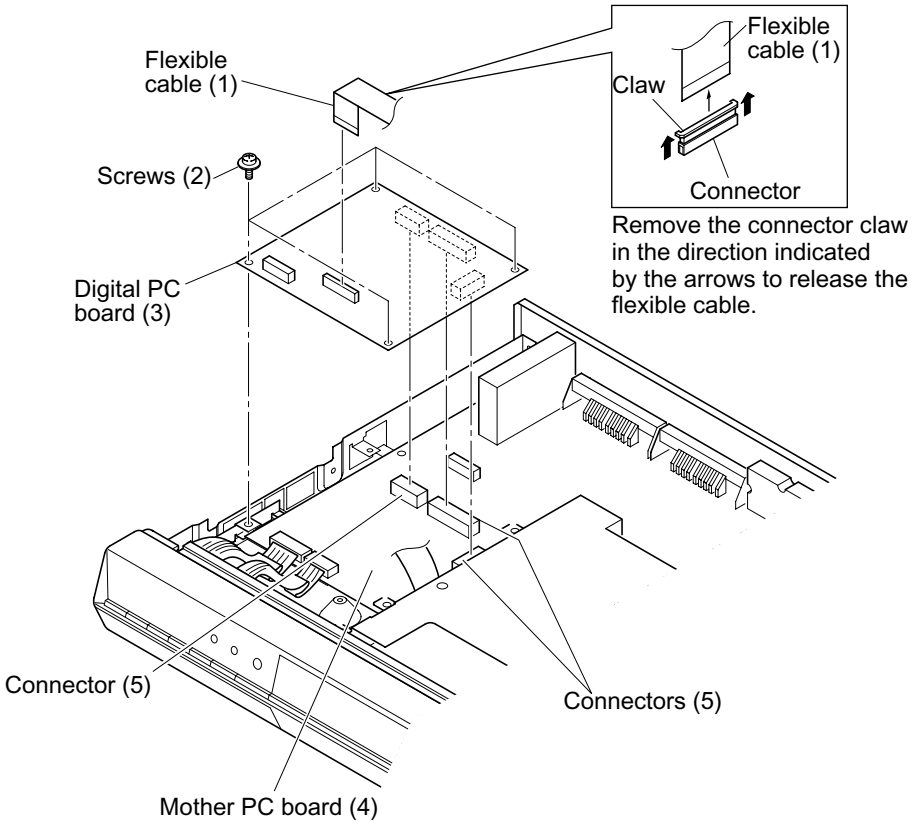


Fig. 2-1-6

1-2-2. Mother PC Board

1. Remove the rear panel. (Refer to item 1-1-4.)
2. Remove the Digital PC board. (Refer to item 1-2-1.)
3. Disconnect three connectors (1).
4. Remove five screws (2) .
5. Pull out the Mother PC board (3) toward the rear side (indicated by the arrow).

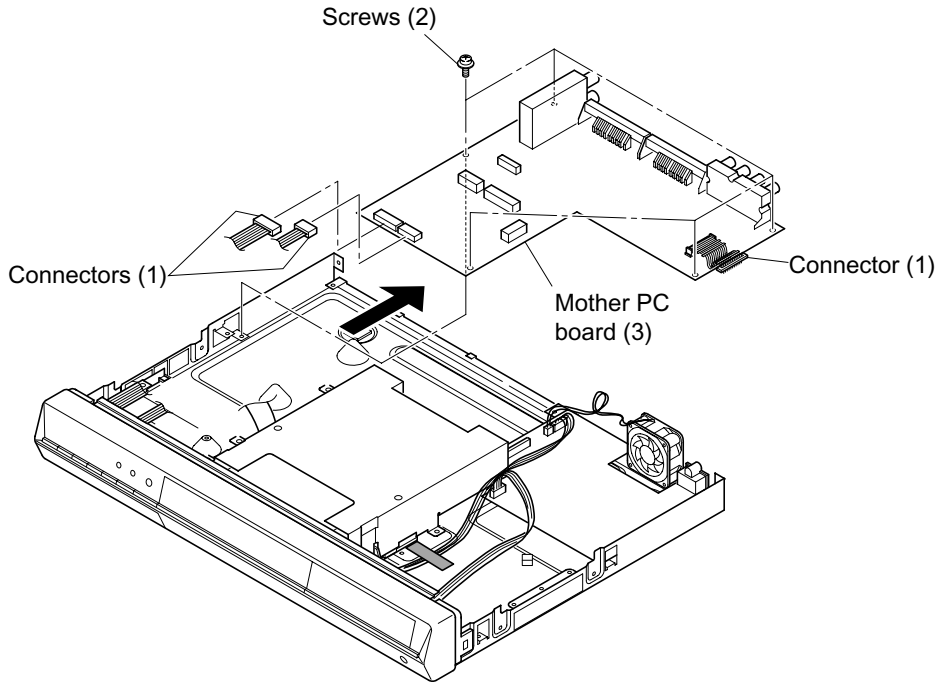


Fig. 2-1-7

1-2-3. Power PC Board

1. Remove the RAM drive. (Refer to item 1-1-3.)
2. Disconnect four connectors (1).
3. Remove four screws (2), then remove the Power PC board (3).

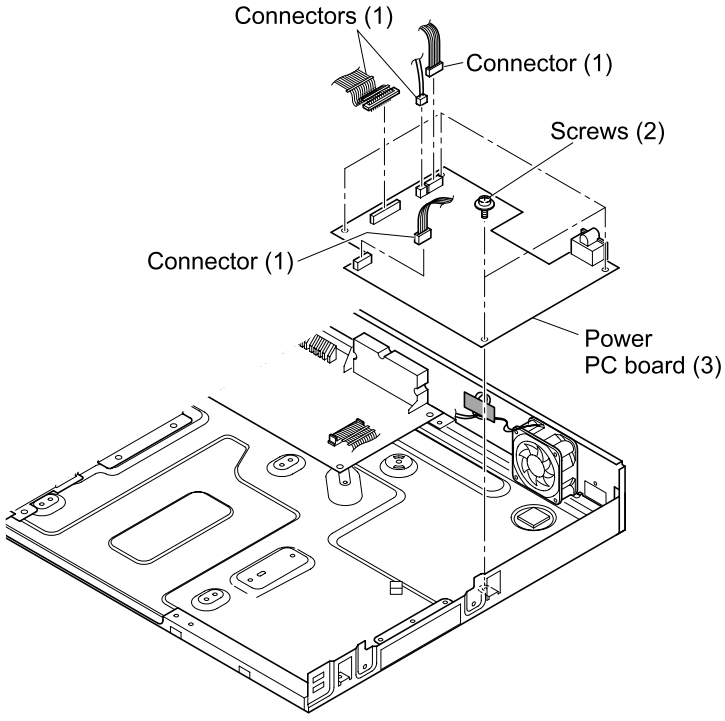


Fig. 2-1-8

1-2-4. Front (R), Front (L), Front (LED) and Front Jack PC Boards

1. Remove the front panel. (Refer to item 1-1-2.)
2. Peel off the tape (1).
3. Remove four screws (2), then remove the stay (3).
4. Remove four screws (4) and two screws (5), then remove the Front (R) PC board (6) and Front (LED) PC board (7).
5. Remove two screws (8), then remove the Front Jack PC board (9).
6. Remove four screws (10), then remove the Front (L) PC board (11).

Note:

- After replacing, attach the tape (1) to its original position.

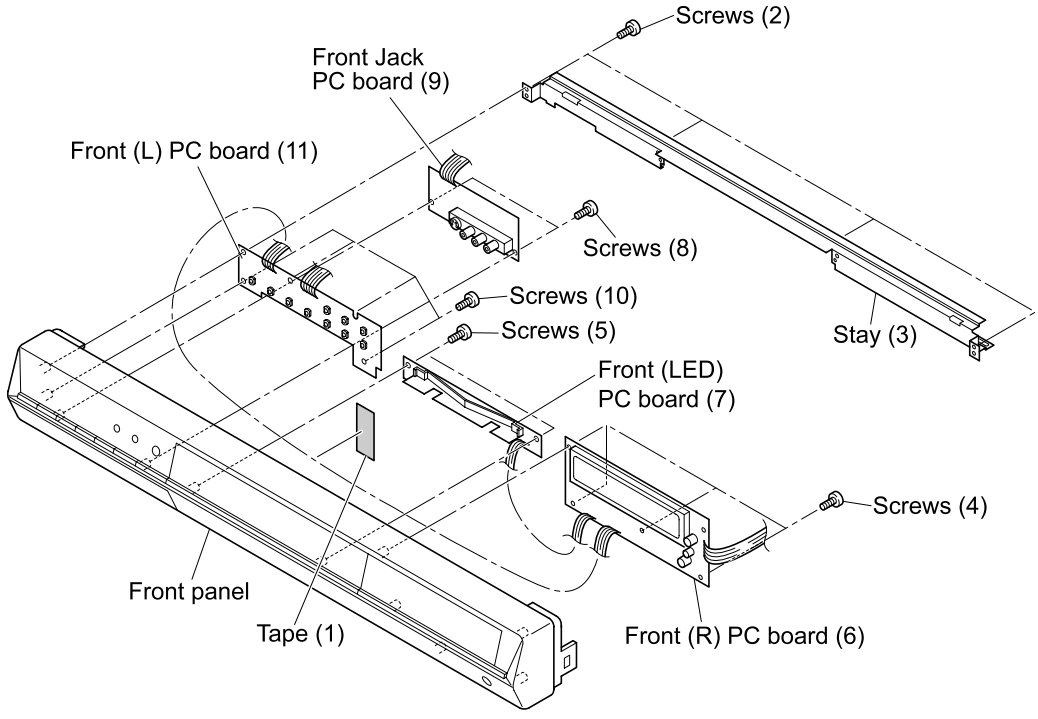


Fig. 2-1-9

Note:

- Fasten with the tape, taking care so that the wire does not hang over the tray door.

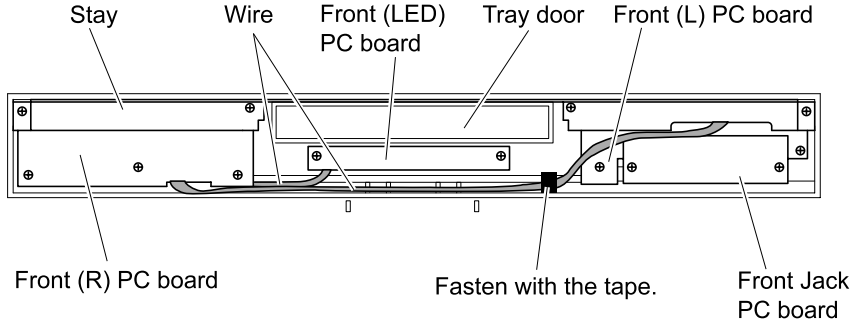


Fig. 2-1-10

2. WIRING CONNECTION DIAGRAM

After the servicing is complete, return the wiring to its original state by using the diagram below as a reference.

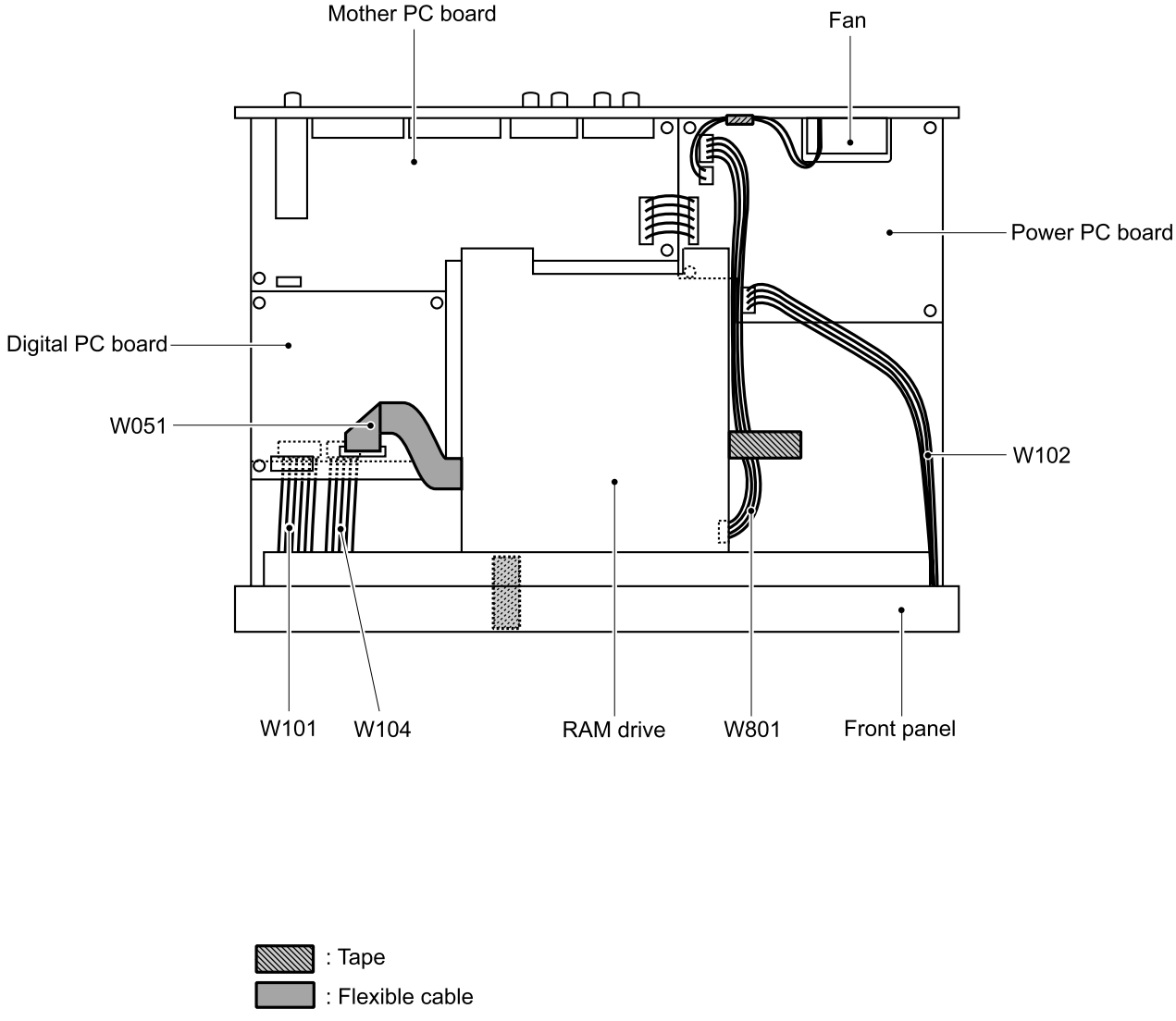


Fig. 2-2-1

SECTION 3
SERVICING DIAGRAMS

1. CIRCUIT SYMBOLS AND SUPPLEMENTARY EXPLANATION

1-1. Precautions for Part Replacement

- In the schematic diagram, parts marked ⚠ (ex. ⚠ F801) are critical part to meet the safety regulations, so always use the parts bearing specified part codes (SN) when replacing them.
- Using the parts other than those specified shall violate the regulations, and may cause troubles such as operation failures, fire etc.

1-2. Solid Resistor Indication

Unit	None ..... Ω K ..... kΩ M ..... MΩ
Tolerance	None ..... ±5% B ..... ±0.1% C ..... ±0.25% D ..... ±0.5% F ..... ±1% G ..... ±2% K ..... ±10% M ..... ±20%
Rated Wattage	(1) Chip Parts None ..... 1/16W (2) Other Parts None ..... 1/6W Other than above, described in the Circuit Diagram.
Type	None ..... Carbon film S ..... Solid R ..... Oxide metal film M ..... Metal film W ..... Cement FR ..... Fusible

Eg. 1

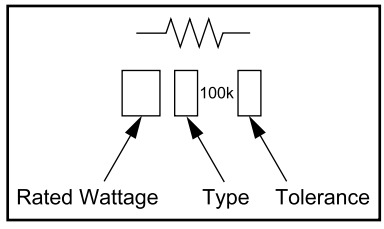


Fig. 3-1-1

1-3. Capacitance Indication

Symbol	..... Electrolytic, Special electrolytic NP ..... Non polarity electrolytic ..... Ceramic, plastic M ..... Film ..... Trimmer
Unit	None ..... F μ ..... μF p ..... pF
Rated voltage	None ..... 50V For other than 50V and electrolytic capacitors, described in the Circuit Diagram.
Tolerance	(1) Ceramic, plastic, and film capacitors of which capacitance are more than 10 pF. None ..... ±5% or more B ..... ±0.1% C ..... ±0.25% D ..... ±0.5% F ..... ±1% G ..... ±2% (2) Ceramic, plastic, and film capacitors of which capacitance are 10 pF or less. None ..... more than ±5 pF B ..... ±0.1 pF C ..... ±0.25 pF (3) Electrolytic, Trimmer Tolerance is not described.
Temperature characteristic (Ceramic capacitor)	None ..... SL For others, temperature characteristics are described. (For capacitors of 0.01 μF and no indications are described as F.)
Static electricity capacity (Ceramic capacitor)	Sometimes described with abbreviated letters as shown in Eg. 3.

Eg. 2

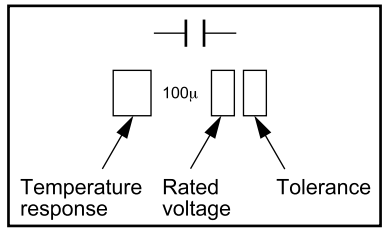


Fig. 3-1-2

Eg. 3

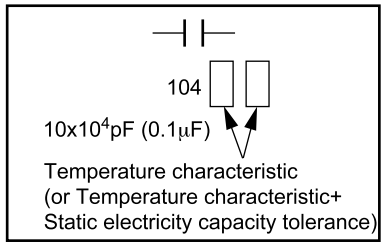


Fig. 3-1-3

1-4. Inductor Indication

Unit	None ..... H μ ..... μH m ..... mH
Tolerance	None .....±5% B .....±0.1% C .....±0.25% D .....±0.5% F .....±1% G .....±2% K .....±10% M .....±20%

Eg. 4

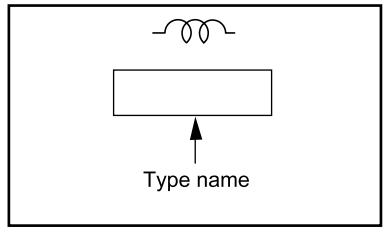


Fig. 3-1-4

1-5. Waveform and Voltage Measurement

- The waveforms for CD/DVD and RF shown in the circuit diagrams are obtained when a test disc is played back.
- All voltage values except the waveforms are expressed in DC and measured by a digital voltmeter.

Eg. 5

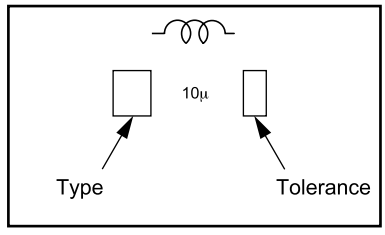


Fig. 3-1-5

1-6. Others

- The parts indicated with "NC" or "KETU" etc. are not used in the circuits of this model.

2. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

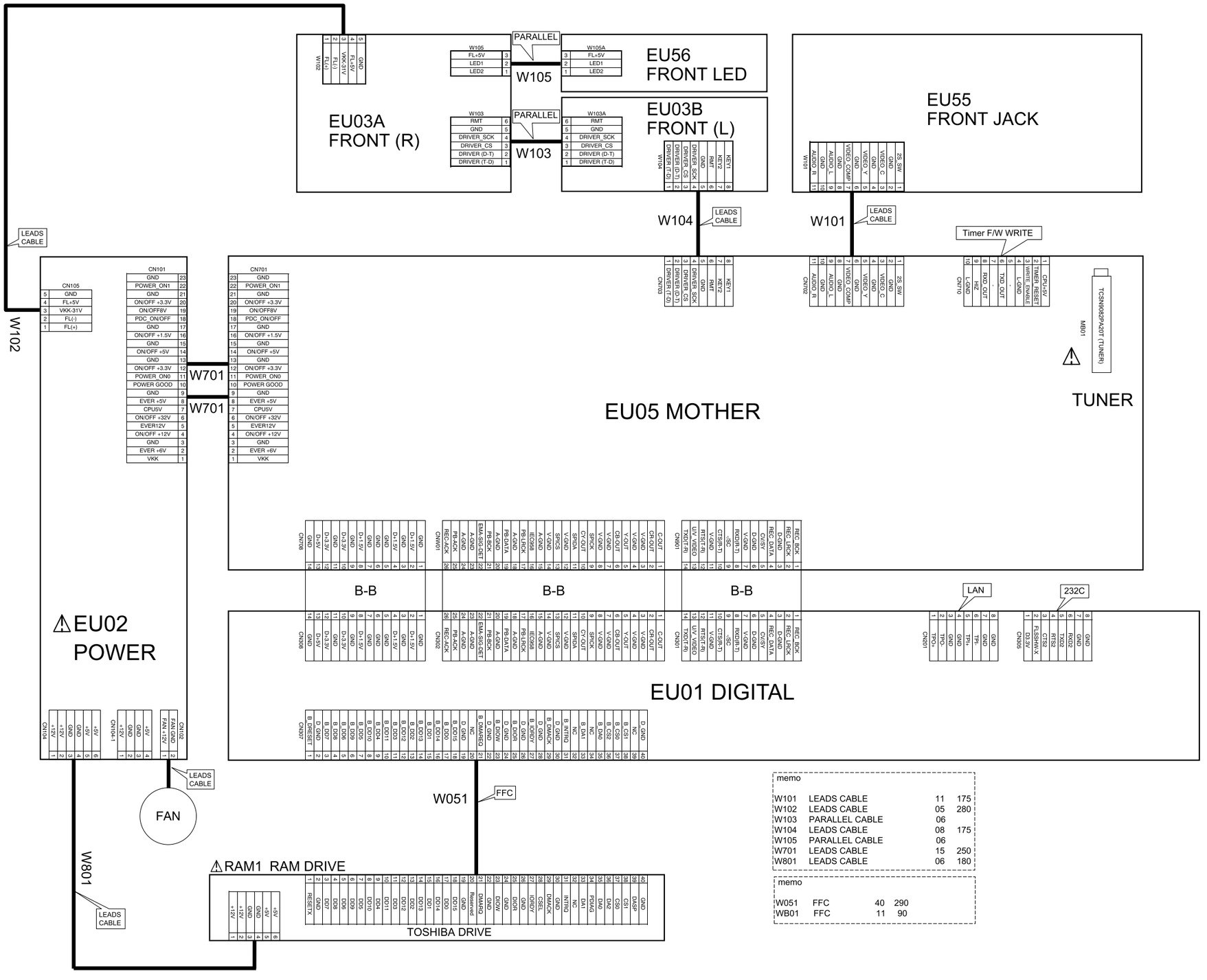


Fig. 3-2-1

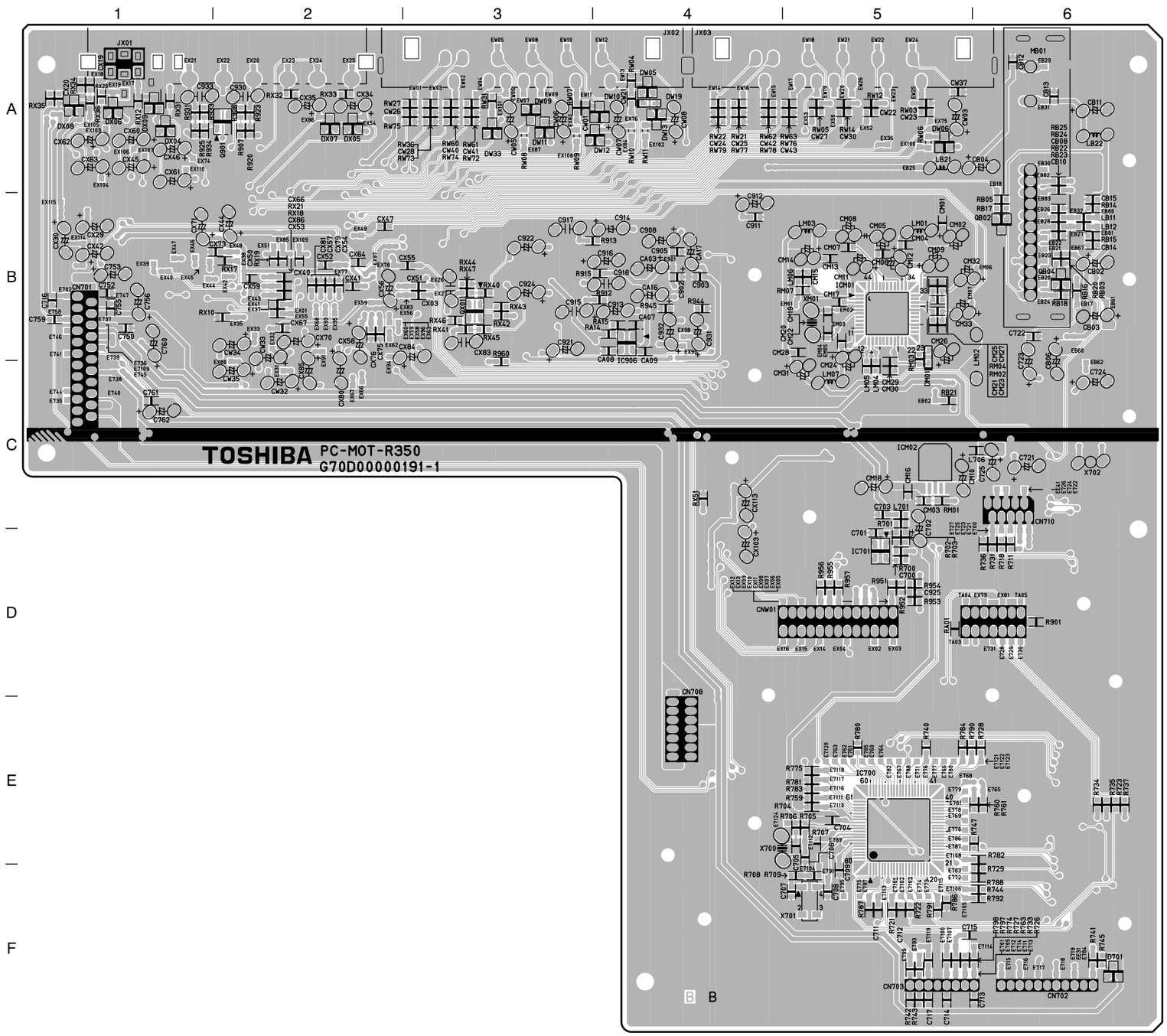


Fig. 3-5-14 EU05 Mother PC Board (Bottom side)

SECTION 4
PARTS LIST

SAFETY PRECAUTION

The parts identified by ! (⚠) mark are critical for safety. Replace only with part number specified.

The mounting position of replacement is to be identical with originals.

The substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

NOTICE

The part number must be used when ordering parts in order to assist in processing, be sure to include the model number and description.

ABBREVIATIONS

- **Integrated Circuit (IC)**
- **Capacitor (Cap)**
  - **Capacitance Tolerance (for Nominal Capacitance more than 10pF)**

Table 4-2-1

Symbol	B	C	D	F	G	J	K	M	N
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20	± 30

Symbol	P	Q	T	U	V	W	X	Y	Z
Tolerance %	+ 100 0	+ 30 – 10	+ 50 – 10	+ 75 – 10	+ 20 – 10	+ 100 – 10	+ 40 – 20	+ 150 – 10	+ 80 – 20

Ex. 10MF J = 10μF ± 5%

  - **Capacitance Tolerance (for Nominal Capacitance 10pF or less)**

Table 4-2-2

Symbol	B	C	D	F	G
Tolerance pF	± 0.1	± 0.25	± 0.5	± 1	± 2

Ex. 10pF G = 10pF ± 2pF

- **Resistor (Res)**
  - **Resistance tolerance**

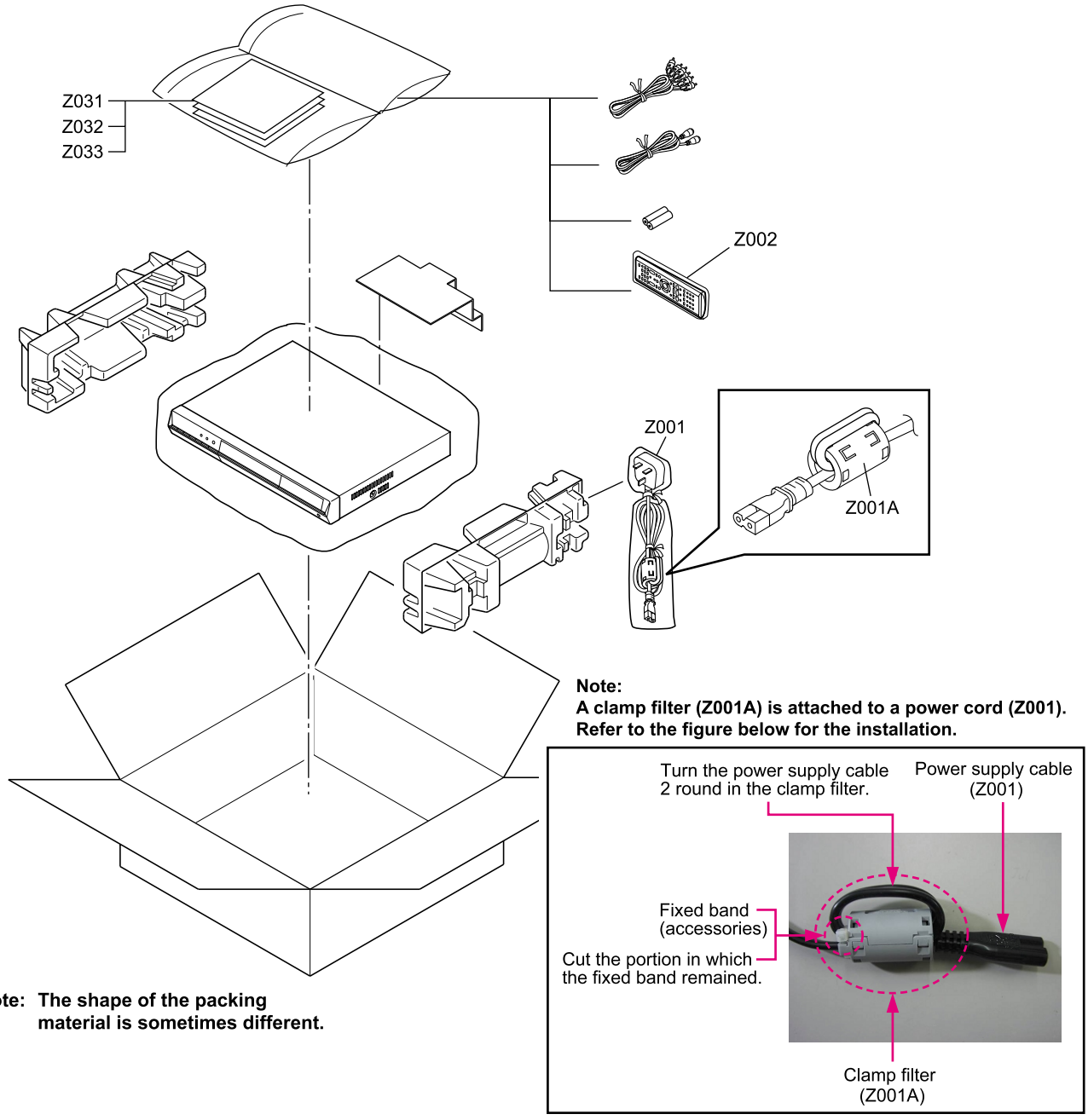
Table 4-3-1

Symbol	B	C	D	F	G	J	K	M
Tolerance %	± 0.1	± 0.25	± 0.5	± 1	± 2	± 5	± 10	± 20

Ex. 470 ohm J = 470 ohm ± 5%

1. EXPLODED VIEWS

1-1. Packing Assembly



Note: The shape of the packing material is sometimes different.

Fig. 4-1-1

1-2. Chassis Assembly

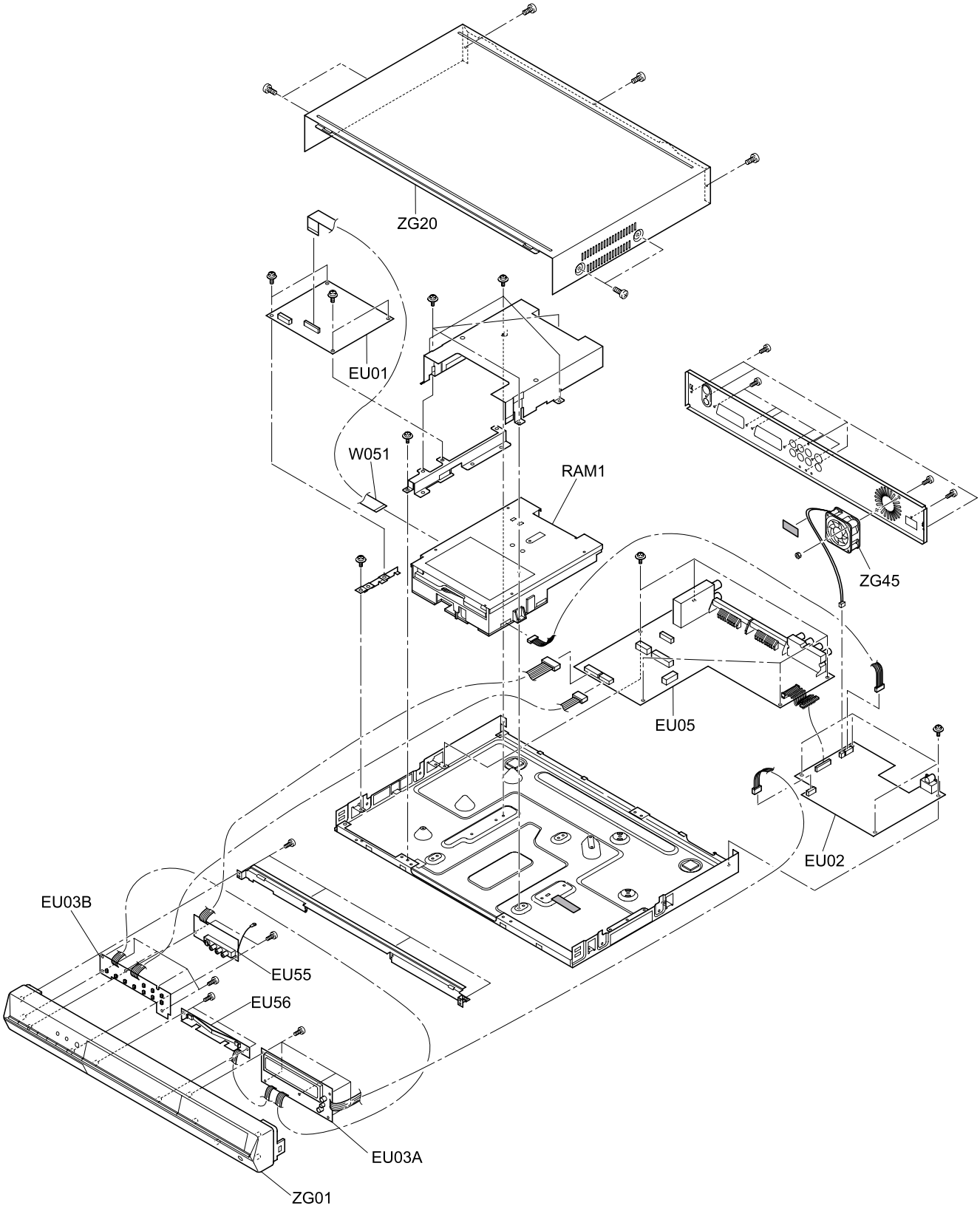


Fig. 4-1-2

2. PARTS LIST

	Location No.	Part No.	Description	
			- MECHANICAL PARTS -	
!	RAM1	P000438600	DVD-RAM	DAV-WR412(RAM-R650)
	W051	P000442580	Cable,Flexible	FFC,40P,L140
!	Z001	79088034	Power Cord	
	Z001A	P000440210	Filter	ZCAT2132-1130
	Z002	P000442540	Remote Control Unit	SE-0194
!	Z031	P000442550	Owners Manual,ST	English
!	Z032	P000442560	Owners Manual,OP	English
!	Z033	P000442570	Owners Manual,Q	English
	ZG01	P000442530	Panel Assy,Front	
	ZG20	P000432500	Cover,Top	
	ZG45	P000401260	Fan,DC	5025LL12SND2

	Location No.	Part No.	Description	
			- ELECTRICAL PARTS -	
	EU01	P000442590	PC Board Assy	Digital
			- INTEGRATED CIRCUITS -	
	IC202	P000378050	IC	SN74AHC1G04HDCKR
	IC203	P000378050	IC	SN74AHC1G04HDCKR
	IC302	P000416750	IC	BA25BC0FP
	IC303	P000440410	IC	MM1573DNRE
	IC304	P000391240	IC	NJM2125F
	IC306	P000378040	IC	SN74AHC1G08HDCKR
	IC307	79040306	IC	PST594JMT
	IC317	P000377920	IC	SN74LV244APWR
			- TRANSISTORS -	
	Q301	79050018	Transistor,Chip	2SA1162-Y
	Q302	79050018	Transistor,Chip	2SA1162-Y
	Q303	79050018	Transistor,Chip	2SA1162-Y
	Q304	79050018	Transistor,Chip	2SA1162-Y
	Q305	79050018	Transistor,Chip	2SA1162-Y
	Q306	79050016	Transistor,Chip	2SC2712-Y
	Q307	79050016	Transistor,Chip	2SC2712-Y
	Q308	79050018	Transistor,Chip	2SA1162-Y
	Q309	79050018	Transistor,Chip	2SA1162-Y
			- MISCELLANEOUS -	
	X201	P000440380	Oscillator,Crystal	25M
	X302	79089168	Oscillator,Crystal	24.576M
	X304	P000442310	Oscillator,Crystal	27M
!	EU02	P000442600	PC Board Assy	Power
			- INTEGRATED CIRCUITS -	
!	IC801	P000442510	IC	TOP244YN
	IC821	P000442490	IC	TA76431S
	IC822	P000442500	IC	PQ120DNA1ZPH
	IC823	P000442490	IC	TA76431S
	IC824	P000442520	IC	TA76432S
	IC825	P000442490	IC	TA76431S
			- TRANSISTORS -	
	Q801	P000442390	Transistor	2SA1015-Y
!	Q821	P000442480	Transistor	TLP621
	Q822	P000442390	Transistor	2SA1015-Y
	Q823	P000440390	Transistor,Chip	RN1404
	Q824	P000442420	Transistor	2SC2458-Y
	Q825	P000442410	Transistor	2SA1048-Y
	Q826	P000442420	Transistor	2SC2458-Y
	Q827	P000442410	Transistor	2SA1048-Y
	Q828	P000442440	Transistor	RN1201
	Q829	P000442430	Transistor	2SA966-Y
	Q830	P000442400	Transistor	2SD2396K
	Q831	P000442400	Transistor	2SD2396K
	Q832	P000442420	Transistor	2SC2458-Y
	Q833	P000442420	Transistor	2SC2458-Y
	Q834	P000442400	Transistor	2SD2396K
	Q835	P000442410	Transistor	2SA1048-Y
	Q836	P000442440	Transistor	RN1201
			- DIODES -	
!	D801	79060072	Diode	1N4005S
!	D802	79060072	Diode	1N4005S
!	D803	79060072	Diode	1N4005S
!	D804	79060072	Diode	1N4005S
	D805	79060009	Diode	RU-1P
	D806	79060070	Diode	HT15G

	Location No.	Part No.	Description	
	D807	79060070	Diode	HT15G
	D821	79060070	Diode	HT15G
	D822	79060071	Diode	HER152G
	D823	79060010	Diode	RK46
	D824	79060070	Diode	HT15G
	D825	79060070	Diode	HT15G
	D826	79060070	Diode	HT15G
	D827	79060096	Diode,Zener	MTZJT-7733D
	D828	79060072	Diode	1N4005S
	D829	79060072	Diode	1N4005S
	D830	79060072	Diode	1N4005S
	D831	79060072	Diode	1N4005S
	D832	79060072	Diode	1N4005S
	D833	79060072	Diode	1N4005S
	D834	79060072	Diode	1N4005S
	D835	79060072	Diode	1N4005S
	D836	P000442460	Diode,Zener	MTZJT-77-5.6B
	D839	P000442450	Diode,Zener	MTZJT-77-4.7B
	D840	79060007	Diode,Zener	UZ3.0BSB
	D841	P000442470	Diode,Zener	MTZJT-77-9.1B
	D842	79060034	Diode,Zener	MTZJT-77-10B
	D843	79060034	Diode,Zener	MTZJT-77-10B
	D844	79060072	Diode	1N4005S
	D845	79060072	Diode	1N4005S
	D846	P000442470	Diode,Zener	MTZJT-77-9.1B
	D849	79060010	Diode	RK46
			- RESISTORS -	
			- MISCELLANEOUS -	
!	F801	79087012	Fuse	1.6A,250V
!	F823	79087013	Fuse	3.00A,125V
!	RF821	79030015	Res,Fusible	2.2ohm J 1/4W
!	RF824	79030015	Res,Fusible	2.2ohm J 1/4W
!	RF825	79030015	Res,Fusible	2.2ohm J 1/4W
!	RF826	79030015	Res,Fusible	2.2ohm J 1/4W
!	T801	P000442380	Power Transformer	EER2822-V019
	EU03A	P000442610	PC Board Assy	Front(R)
			- INTEGRATED CIRCUITS -	
	IC101	P000416700	IC	PT6315
			- DIODES -	
	D101	79060019	Diode,Chip	1SS355
			- MISCELLANEOUS -	
	DS101	P000442320	Display,FL	20100-1A08-D787
	MT01	P000434980	Module,IR	GP1UM271RK0F
	S107	P000377940	Switch,Push-Lever	
	EU03B	P000442620	PC Board Assy	Front(L)
			- MISCELLANEOUS -	
	S101	P000391050	Switch,Tact	
	S102	P000391050	Switch,Tact	
	S103	P000391050	Switch,Tact	
	S104	P000391050	Switch,Tact	
	S105	P000391050	Switch,Tact	
	S106	P000391050	Switch,Tact	
	S108	P000391050	Switch,Tact	
	S109	P000391050	Switch,Tact	
	S110	P000391050	Switch,Tact	
	S111	P000391050	Switch,Tact	
	EU05	P000442630	PC Board Assy	Mother
			- INTEGRATED CIRCUITS -	
	IC700	P000442340	IC	UPD78F4225YGC-8BT-A
	IC701	P000391180	IC	PST3222NR
	IC702	P000391150	IC	DC74HCT125M

Location No.	Part No.	Description	
IC703	P000442350	IC	LC74793JM-TLM-E
IC901	P000440480	IC	PCM1755DBQR
IC902	P000440510	IC	RC4580IDR
IC904	79040397	IC	MM1575ANRE
IC906	P000416650	IC,Terminal,OPT	LAF1001-0301F
ICB10	P000395150	IC	MM1565AFBE
ICM01	P000378240	IC	MSP3417G
ICM02	P000395160	IC	PQ05DZ1UJ00H
ICX01	P000442360	IC	LV7105M-MPB-E
ICX02	P000442370	IC	MM1623XFBE
ICX03	P000405080	IC	XC6209
ICX04	P000395150	IC	MM1565AFBE
		- TRANSISTORS -	
Q901	79050014	Transistor,Chip	HN1C03F
Q902	79050016	Transistor,Chip	2SC2712-Y
Q903	79050018	Transistor,Chip	2SA1162-Y
Q904	79050001	Transistor,Chip	RN2402
Q905	79050043	Transistor,Chip	RN1402
Q906	79050001	Transistor,Chip	RN2402
QW01	79050016	Transistor,Chip	2SC2712-Y
QW02	79050043	Transistor,Chip	RN1402
QW03	79050043	Transistor,Chip	RN1402
QW04	79050018	Transistor,Chip	2SA1162-Y
QX01	79050014	Transistor,Chip	HN1C03F
		- DIODES -	
D701	79060028	Diode,Chip	1SS226
D901	79060019	Diode,Chip	1SS355
D902	79060019	Diode,Chip	1SS355
DM01	79060019	Diode,Chip	1SS355
DW01	79060028	Diode,Chip	1SS226
DW03	79060028	Diode,Chip	1SS226
DW04	79060019	Diode,Chip	1SS355
DW05	79060028	Diode,Chip	1SS226
DW06	79060028	Diode,Chip	1SS226
DW07	79060028	Diode,Chip	1SS226
DW08	79060019	Diode,Chip	1SS355
DW09	79060028	Diode,Chip	1SS226
DW10	79060028	Diode,Chip	1SS226
DW11	79060028	Diode,Chip	1SS226
DW12	79060028	Diode,Chip	1SS226
DW13	79060028	Diode,Chip	1SS226
DW14	79060028	Diode,Chip	1SS226
DW15	79060019	Diode,Chip	1SS355
DW16	79060028	Diode,Chip	1SS226
DW17	79060019	Diode,Chip	1SS355
DW19	79060019	Diode,Chip	1SS355
DW20	79060028	Diode,Chip	1SS226
DW22	79060019	Diode,Chip	1SS355
DW33	79060028	Diode,Chip	1SS226
DW40	79060019	Diode,Chip	1SS355
DW41	79060019	Diode,Chip	1SS355
DX01	79060028	Diode,Chip	1SS226
DX02	79060028	Diode,Chip	1SS226
DX03	79060028	Diode,Chip	1SS226
DX04	79060028	Diode,Chip	1SS226
DX05	79060028	Diode,Chip	1SS226
DX06	79060028	Diode,Chip	1SS226
DX07	79060028	Diode,Chip	1SS226
DX08	79060028	Diode,Chip	1SS226
DX09	79060028	Diode,Chip	1SS226
DX10	79060019	Diode,Chip	1SS355
DX11	79060019	Diode,Chip	1SS355
		- MISCELLANEOUS -	
JX01	P000435170	Jack	LAP5100-1001F

	Location No.	Part No.	Description	
	JX02	P000434970	Connector,RGB	MRC-021V-29PC
	JX03	P000434970	Connector,RGB	MRC-021V-29PC
!	MB01	P000442660	Tuner	TCPL0601PD25T
	X700	P000391040	Resonator,Crystal	AT-41-12.5M
	X701	P000363400	Oscillator,Crystal	SP-T2A
	X702	P000395090	Resonator,Ceramic	FCR4.43MC5AT
	XM01	P000395100	Resonator,Crystal	AT-41-18.432M
	EU55	P000442640	PC Board Assy	Front Jack
			- MISCELLANEOUS -	
	PJ111	P000402780	Jack,3P+1Y/C	LAP5000-1201F
	EU56	P000442650	PC Board Assy	Front(LED)
			- DIODES -	
	D110	P000442330	Diode,LED	EL-264-7UBC/S1142
	D111	P000442330	Diode,LED	EL-264-7UBC/S1142

SPECIFICATIONS

Power requirement during operation	25W
Power requirement at standby	3.1W
Power supply	230V AC, 50Hz
Mass	3.4kg
External dimension	Width 430 x Height 58 x Depth 325mm
Tuner	System: Frequency synthesizer Channel coverage: PAL I VHF: A-J, 11, 13, E2-E12 UHF: E21-E69 CATV: X, Y, Z,S1-S41,1-53 (48MHz to 464MHz, 8MHz steps)
Aerial input/output terminal	VHF/UHF : 75Ω, IEC Connector
Signal system	Standard PAL Colour TV system
Laser	Semiconductor laser, Wavelength : 650nm/780nm
Format	DVD-VR format, DVD-Video format
Image recording system	MPEG2
Sound recording system	Dolby Digital M1
VIDEO input	1.0Vp-p (75Ω), Sync signal negative, Pin jack x 1 system, 1 in front SCART socket x 2 at rear
VIDEO output	1.0Vp-p (75Ω), Sync signal negative, Pin jack x 1 system, 1 at rear SCART socket x 2 at rear
S-VIDEO input	(Y) 1.0Vp-p (75Ω), Sync signal negative, (C) 0.286Vp-p (75Ω), 1 in front Mini DIN4 Pin x 1 system, SCART socket x 1 at rear
S-VIDEO output	(Y) 1.0Vp-p (75Ω), Sync signal negative, (C) 0.286Vp-p (75Ω), 1 at rear Mini DIN4 Pin x 1 system, SCART socket x 1 at rear
COMPONENT output(Y, P_B, P_R)	Y output (green), 1.0Vp-p (75Ω), Sync signal negative, Pin jack x 1 system P_B, P_R output (blue, red), 0.7Vp-p (75Ω), Pin jack x 1 system each
RGB output	(R) 0.7Vp-p (75Ω), (G) 0.7Vp-p (75Ω), (B) 0.7Vp-p (75Ω), SCART socket x 1 at rear (AV1 only)
AUDIO input	2.0V (rms), 50kΩ or below, pin jack (L, R) x 1 system, 1 in front, SCART socket x 2 at rear
AUDIO output	2.0V (rms), 200Ω or above, pin jack (L, R) x 1 system 1 at rear, SCART socket x 2 at rear
DIGITAL BITSTREAM/PCM AUDIO OUTPUT (COAXIAL terminal)	0.5Vp-p (75Ω), pin jack x 1 system
Remote control	Wireless remote control (SE-R0194)
Operating conditions	Temperature: 5°C~35°C, Position: Horizontal
Clock display	24 hour digital display
Clock accuracy	Quartz (monthly deviation: approximately ±30 seconds)

Supplied Accessories

Remote control	1	Video/Audio cable	1
Batteries (R03)	2	OWNER'S MANUAL (INSTALLATION GUIDE)	1
Power cord	1	OWNER'S MANUAL (OPERATIONS)	1
Coaxial cable	1	Quick Reference	1

- This model complies with the specifications above.
- Designs and specifications are subject to change without notice.
- This model may not be compatible with features and/or specifications that may be added in the future.

TOSHIBA CORPORATION
1 1, SHIBAURA 1 CHOME, MINATO KU, TOKYO 105 8001, JAPAN

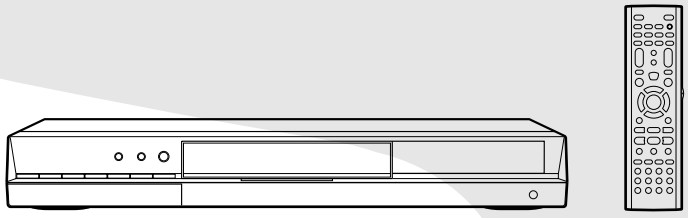
TOSHIBA

FILE NO. 810-200548

SERVICE MANUAL

DVD VIDEO RECORDER

D-R350SB



May, 2005 Ⓢ

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram

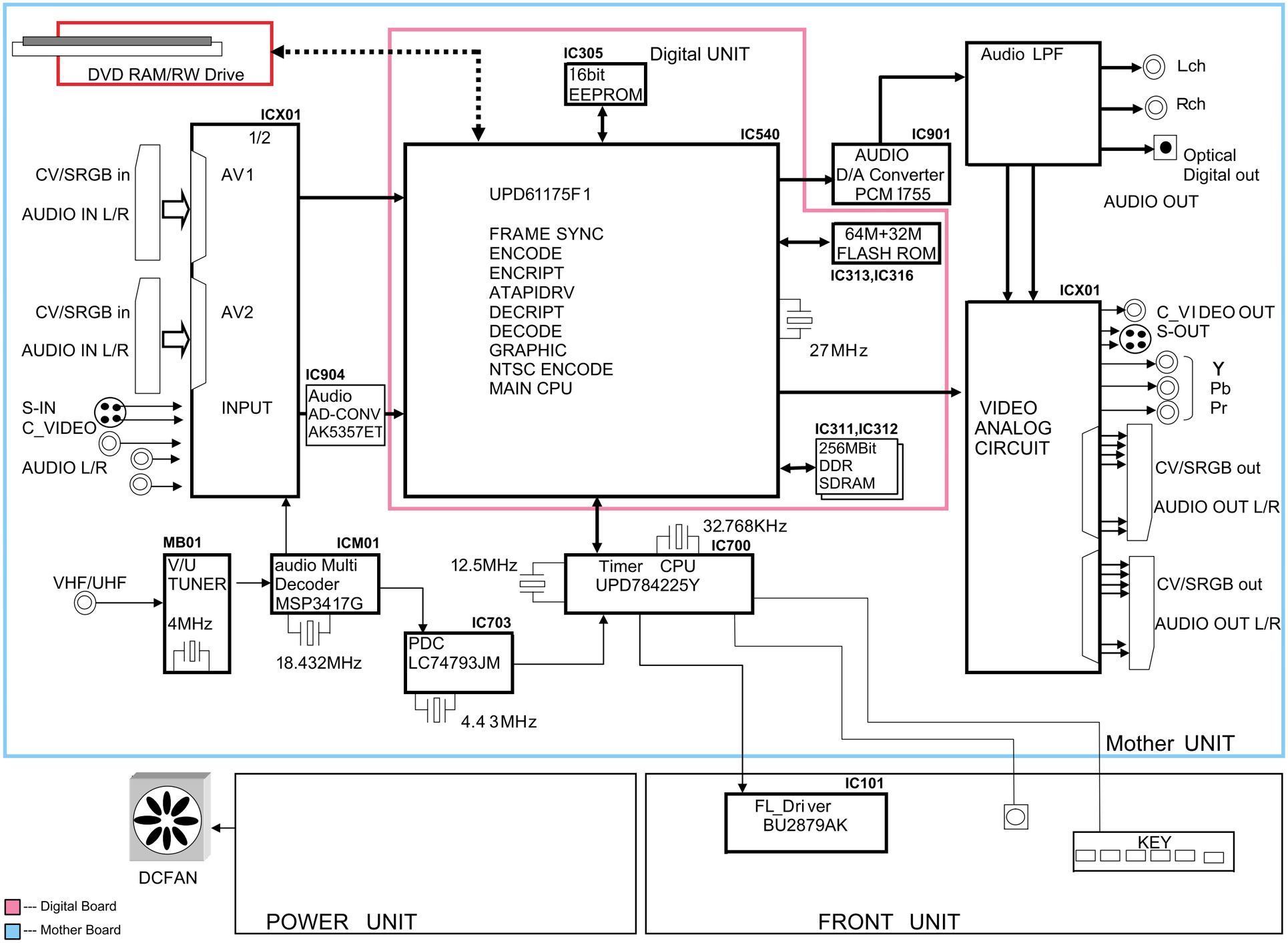


Fig. 3-3-1

4. CIRCUIT DIAGRAMS

4-1. Power Supply Circuit Diagram

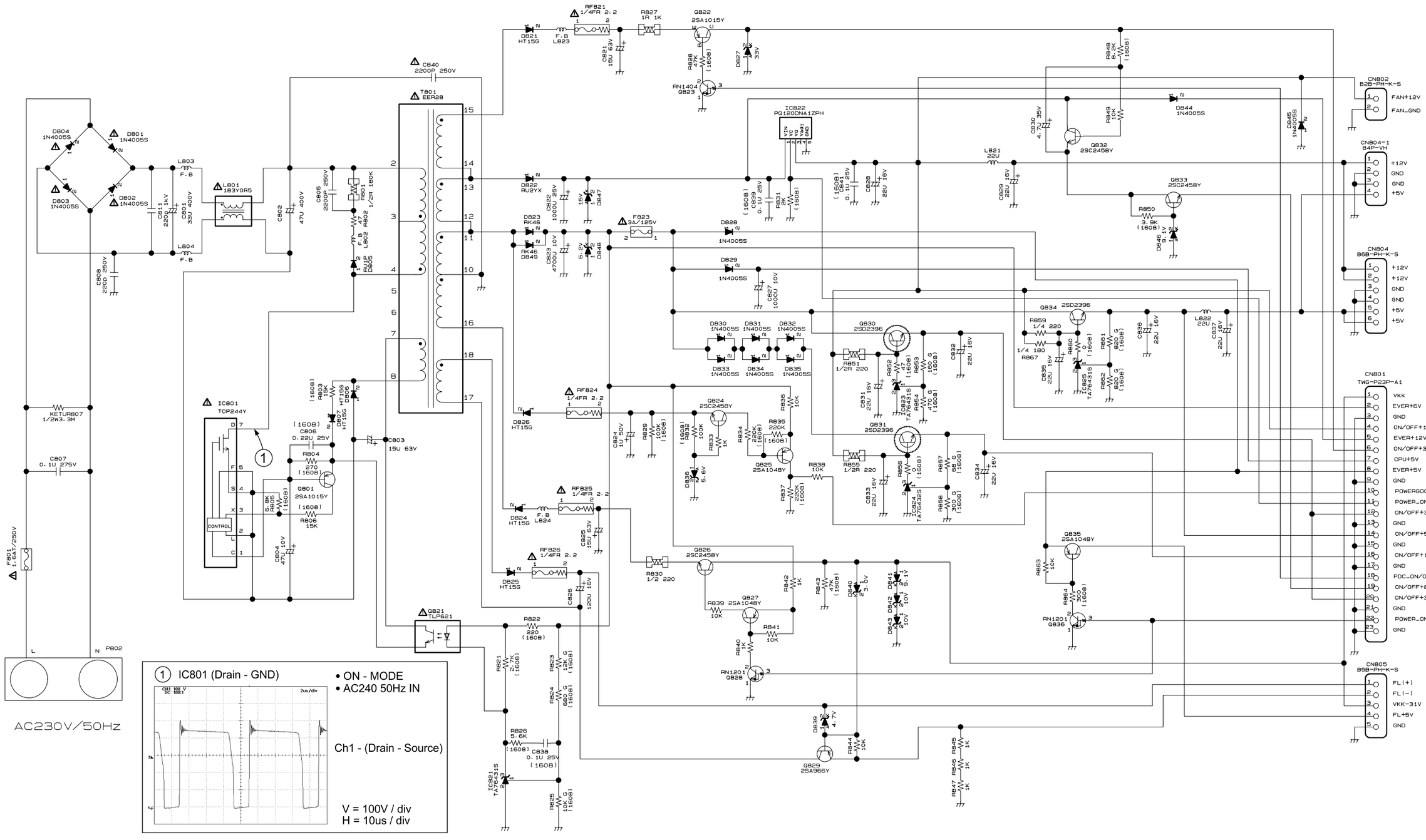


Fig. 3-4-1

- **Table of the Terminal Voltage of the Power Supply Circuit**

Conditions : AC240V 50Hz IN

	IC801					IC821			IC822			
PIN No,	1	2	3	4	5	1	2	3	1	2	3	5
OFF	5.85V	0V	14.58V	0V	0V	2.49V	0V	4.18V	17.36V	0V	0V	0V
ON	5.84V	0V	14.33V	0V	0V	2.47V	0V	4.23V	13.68V	4.42V	11.99V	0V
DVD-PLAY	5.84V	0V	14.33V	0V	0V	2.47V	0V	4.23V	13.68V	4.42V	11.99V	0V

	IC823			IC824			IC825		
PIN No,	1	2	3	1	2	3	1	2	3
OFF	0V	0V	0V	0V	0V	0V	0V	0V	0V
ON	2.50V	0V	2.21V	1.25V	0V	2.15V	2.50V	0V	5.62V
DVD-PLAY	2.50V	0V	2.21V	1.25V	0V	2.15V	2.50V	0V	5.62V

	Q822			Q823			Q824			Q825		
	E	C	B	E	C	B	E	C	B	E	C	B
OFF	43.52V	0V	35.53V	0V	35.43V	0V	-17.49V	-17.48V	-16.70V	4.54V	4.53V	3.92V
ON	32.57V	32.55V	31.88V	0V	0V	4.71V	-18.17V	-18.16V	-17.37V	4.50V	4.49V	3.88V
DVD-PLAY	32.59V	32.55V	31.88V	0V	0V	4.71V	-18.17V	-18.16V	-17.37V	4.50V	4.49V	3.88V

	Q826			Q827			Q828			Q829		
	E	C	B	E	C	B	E	C	B	E	C	B
OFF	-27.43V	-27.37V	-26.67V	1.77V	1.75V	1.06V	0V	0V	4.63V	-23.36V	-25.86V	-23.93V
ON	-28.67V	-28.59V	-27.88V	1.70V	1.68V	0.99V	0V	0V	4.61V	-24.66V	-29.34V	-25.21V
DVD-PLAY	-28.72V	-28.64V	-27.94V	1.70V	1.68V	0.99V	0V	0V	4.61V	-24.72V	-29.38V	-25.24V

	Q830			Q831			Q832			Q833		
	E	C	B	E	C	B	E	C	B	E	C	B
OFF	0V	5.68V	0V	0V	4.96V	0V	0V	17.36V	0V	0V	0V	0V
ON	3.37V	5.60V	3.94V	1.54V	3.28V	2.15V	13.60V	13.66V	14.33V	8.19V	13.60V	8.87V
DVD-PLAY	3.37V	5.60V	3.94V	1.54V	3.28V	2.15V	13.62V	13.66V	14.34V	8.19V	13.61V	8.87V

	Q834			Q835			Q836		
	E	C	B	E	C	B	E	C	B
OFF	0V	5.68V	0V	4.99V	4.96V	4.18V	0V	0.06V	4.63V
ON	5.01V	5.57V	5.60V	4.94V	4.87V	4.10V	0V	0.05V	4.62V
DVD-PLAY	5.01V	5.57V	5.60V	4.94V	4.87V	4.09V	0V	0.05V	4.62V

Point	Terminal Voltage		
	OFF	ON	DVD-PLAY
C802.(+) - C802.(-)	336.2V	332.3V	332.3V
C803.(+) - C803.(-)	11.60V	16.74V	16.74V
C821.(+) - GND	43.52V	37.39V	37.44V
C822.(+) - GND	17.36V	13.68V	13.67V
C823.(+) - GND	5.68V	5.67V	5.67V
C824.(+) - GND	-17.48V	-18.17V	-18.17V
C825.(+) - GND	-31.55V	-33.09V	-33.14V
C826.(+) - GND	-19.11V	-20.32V	-20.34V
CN801.(4) - GND[12V]	0.00V	12.00V	12.00V
C829.(+) - GND[RAM+12V]	0.00V	11.99V	11.98V
C837.(+) - GND[RAM+5V]	0.00V	4.99V	4.99V

Point	Terminal Voltage		
	OFF	ON	DVD-PLAY
C801.(1) - GND[Vkk]	-27.42V	-28.62V	-28.64V
CN801.(5) - GND[EVER+12V]	17.01V	12.93V	12.93V
CN801.(6) - GND[32V]	0.00V	32.47V	32.55V
CN801.(7) - GND[CPU+5V]	4.97V	4.97V	4.97V
CN801.(8) - GND[EVER+5V]	4.97V	4.94V	4.95V
CN801.(12) - GND[ON/OFF+3.3V]	0.00V	3.35V	3.35V
CN801.(14) - GND[ON/OFF+5V]	0.00V	5.01V	5.01V
CN801.(16) - GND[ON/OFF+1.5V]	0.00V	1.46V	1.46V
CN801.(19) - GND[ON/OFF+8V]	-0.00V	-8.17V	-8.15V
CN805.(2) - GND[FL-]	-23.38V	-24.66V	-24.71V
CN805.(4) - GND[FL+5V]	4.94V	4.86V	4.86V

4-2. Front Circuit Diagram

4-2-1. Front Jack Circuit Diagram

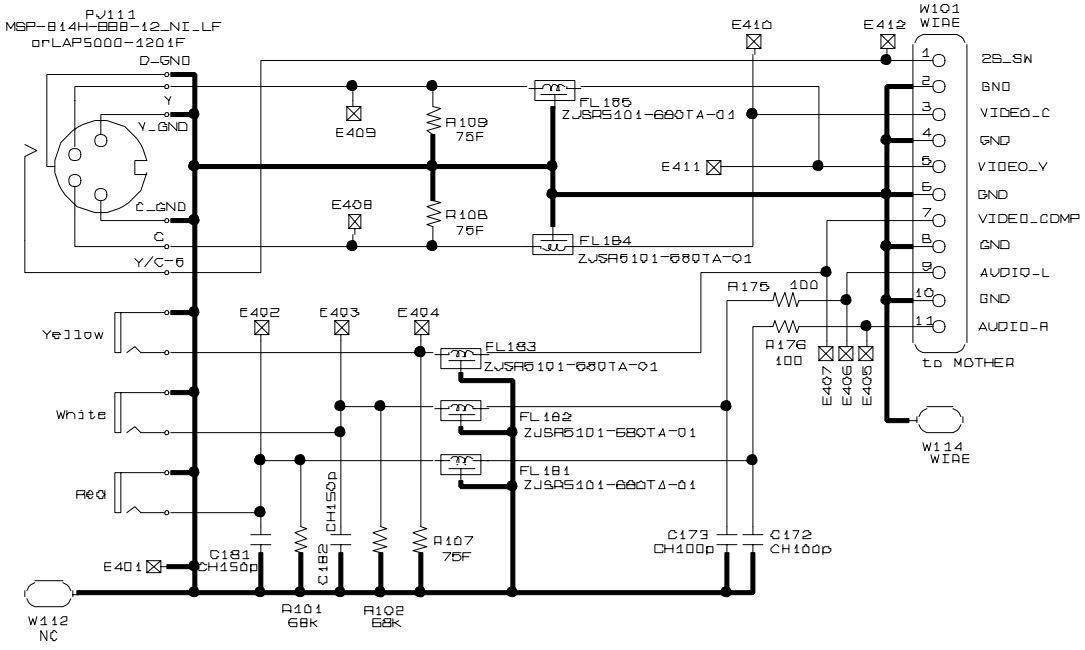


Fig. 3-4-2

4-2-2. Front (L) Circuit Diagram

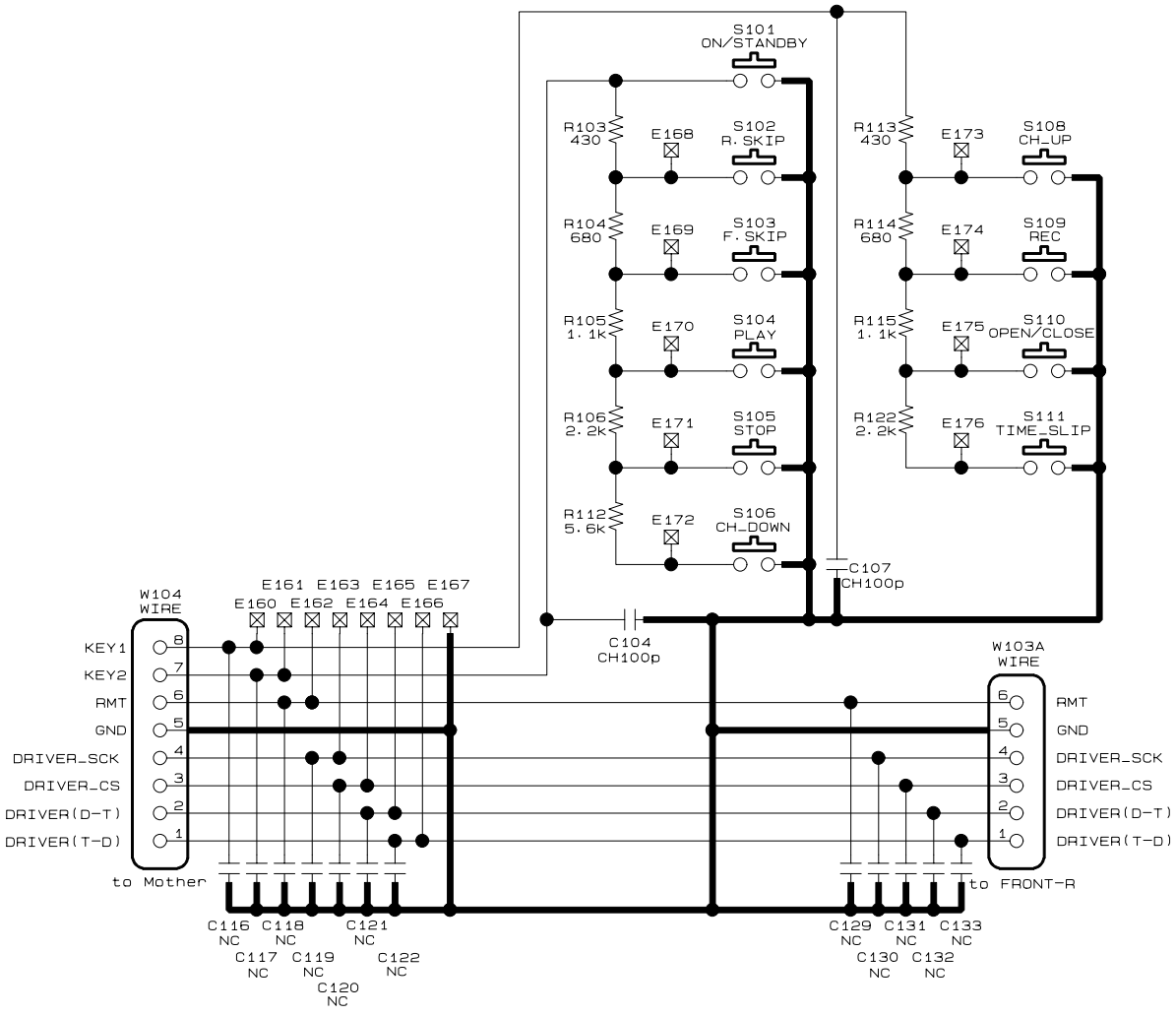


Fig. 3-4-3

4-2-3. Front (R) Circuit Diagram

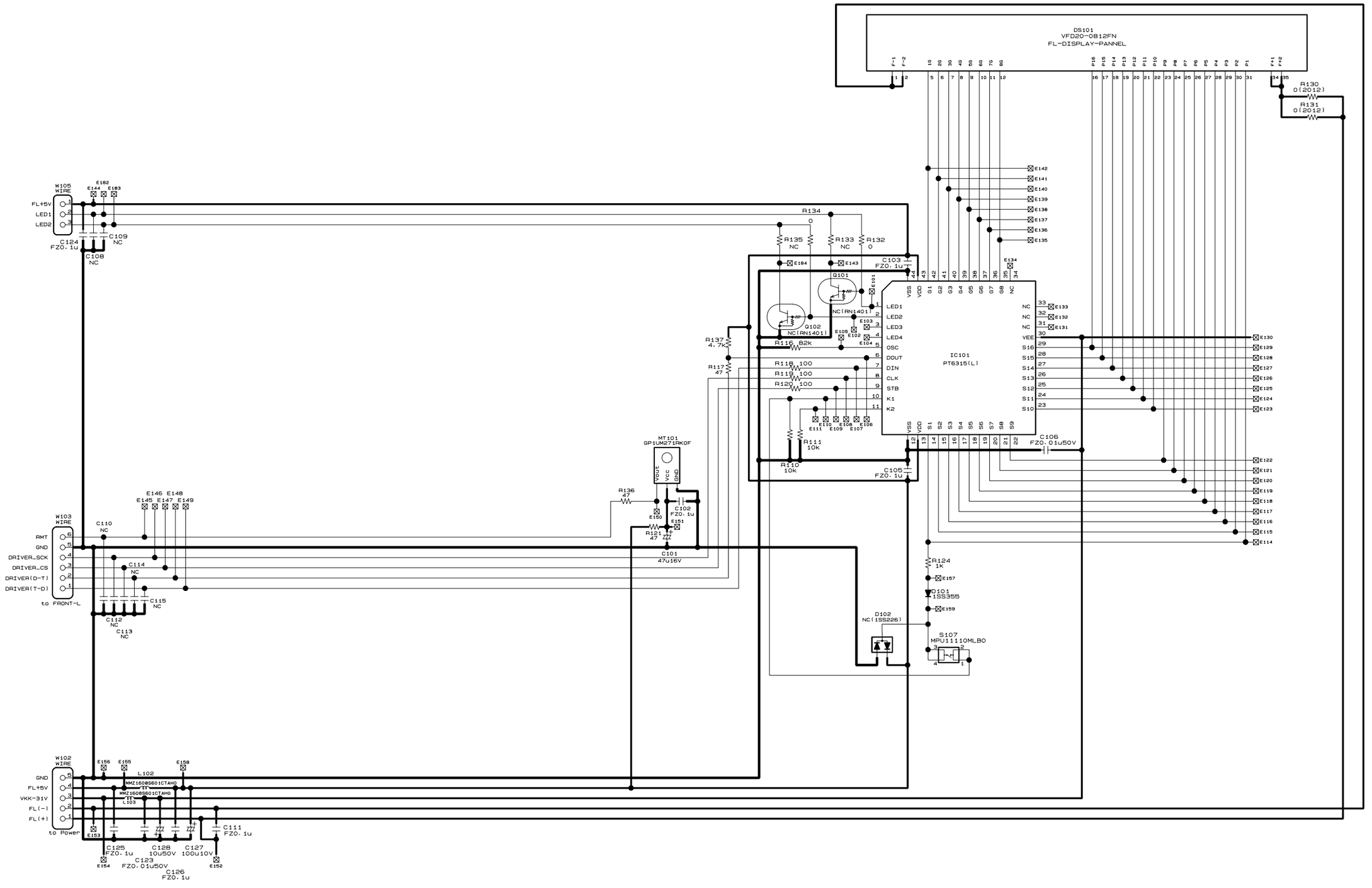


Fig. 3-4-4

4-2-4. Front LED Circuit Diagram

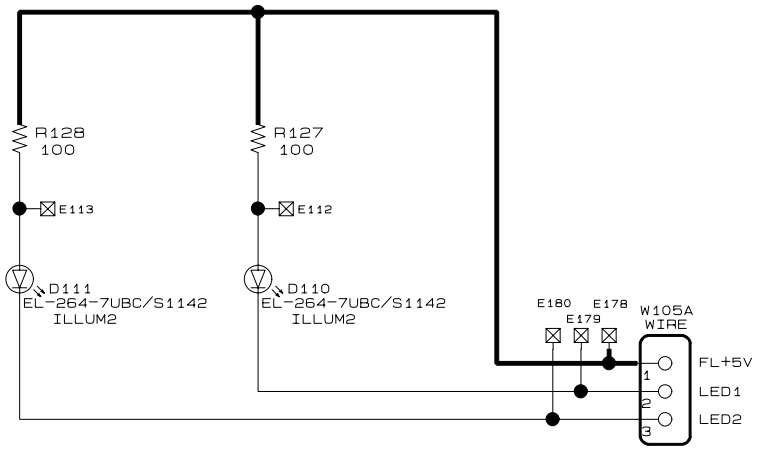


Fig. 3-4-5

4-3. Digital Circuit Diagram

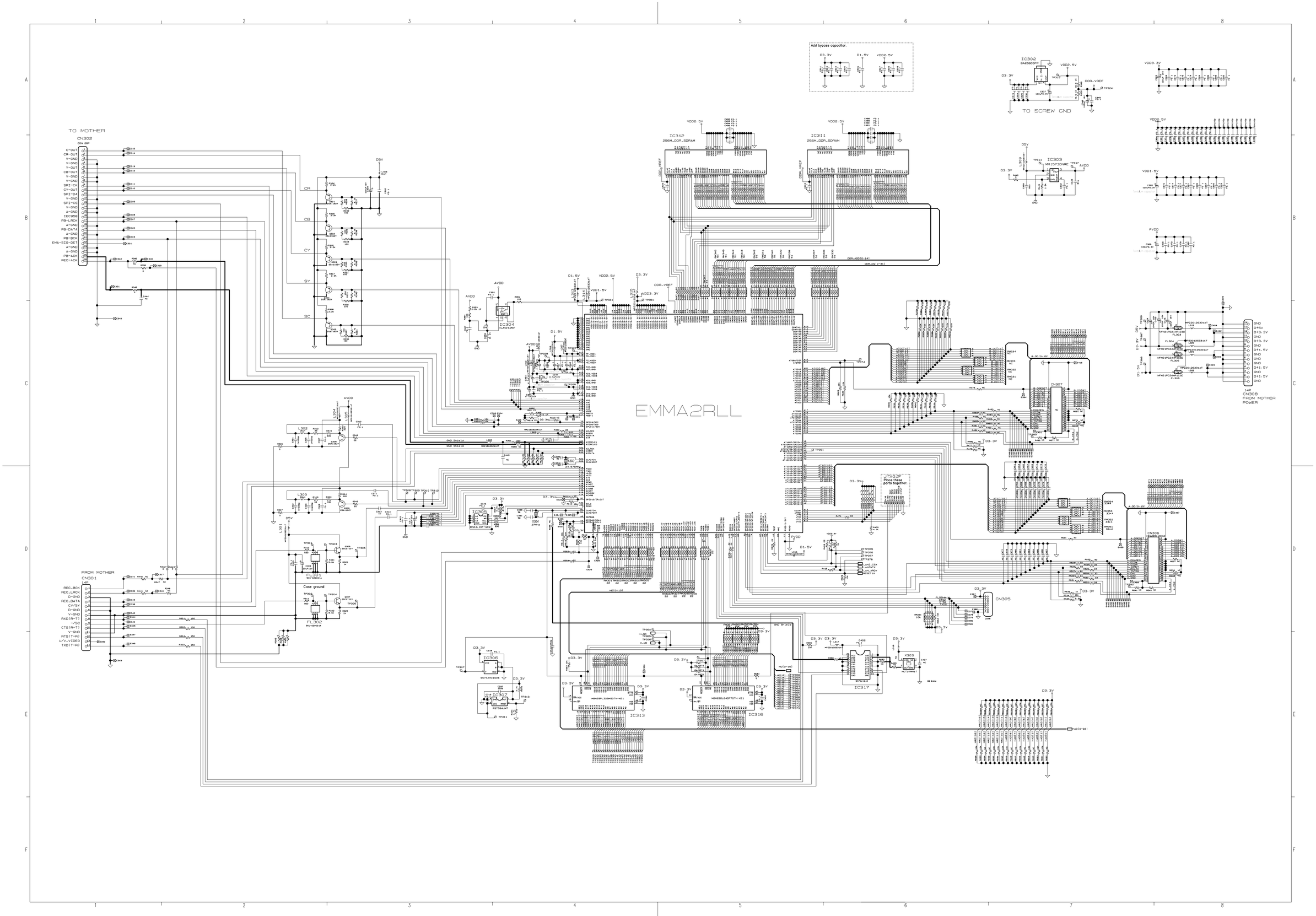
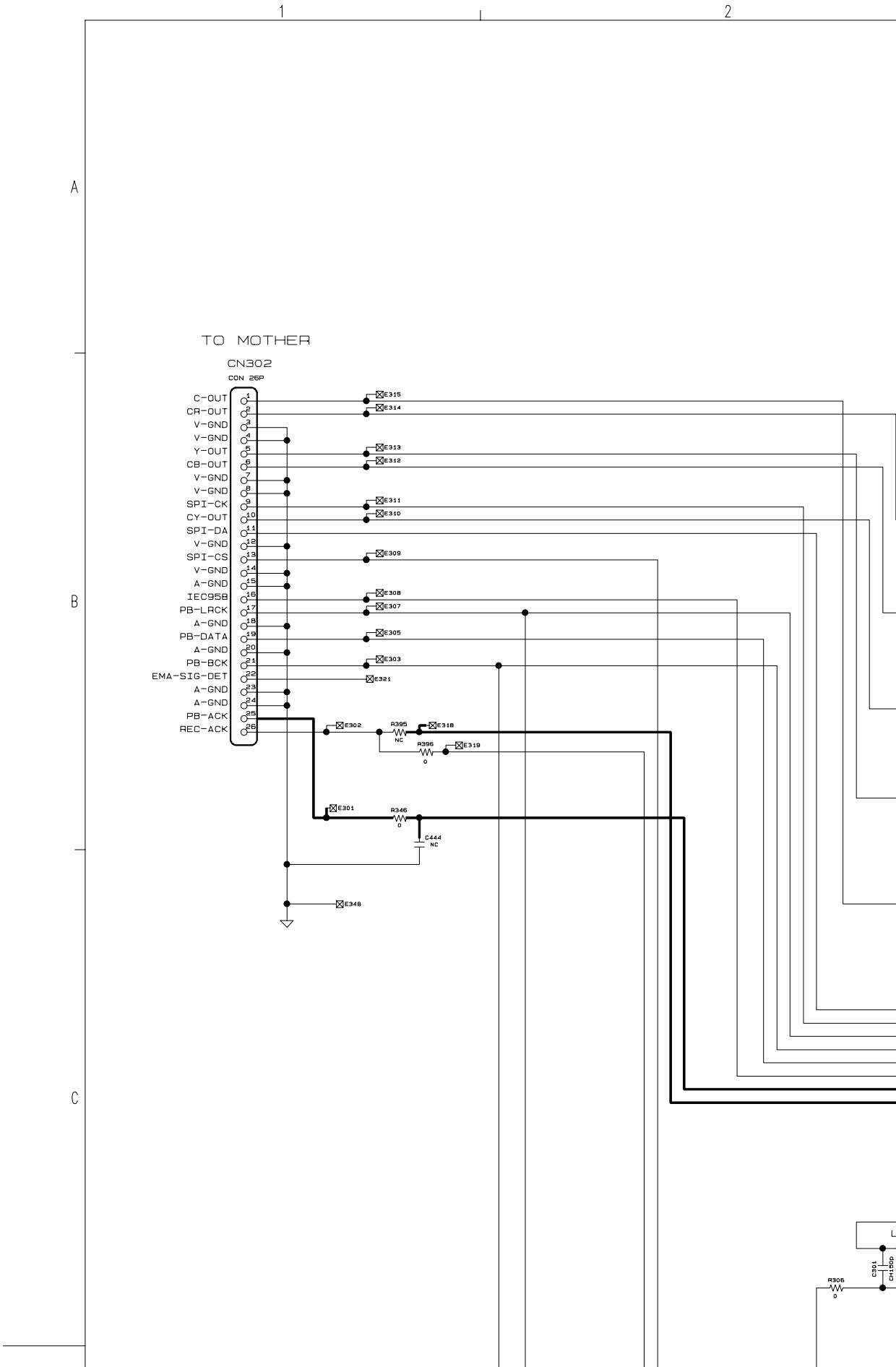
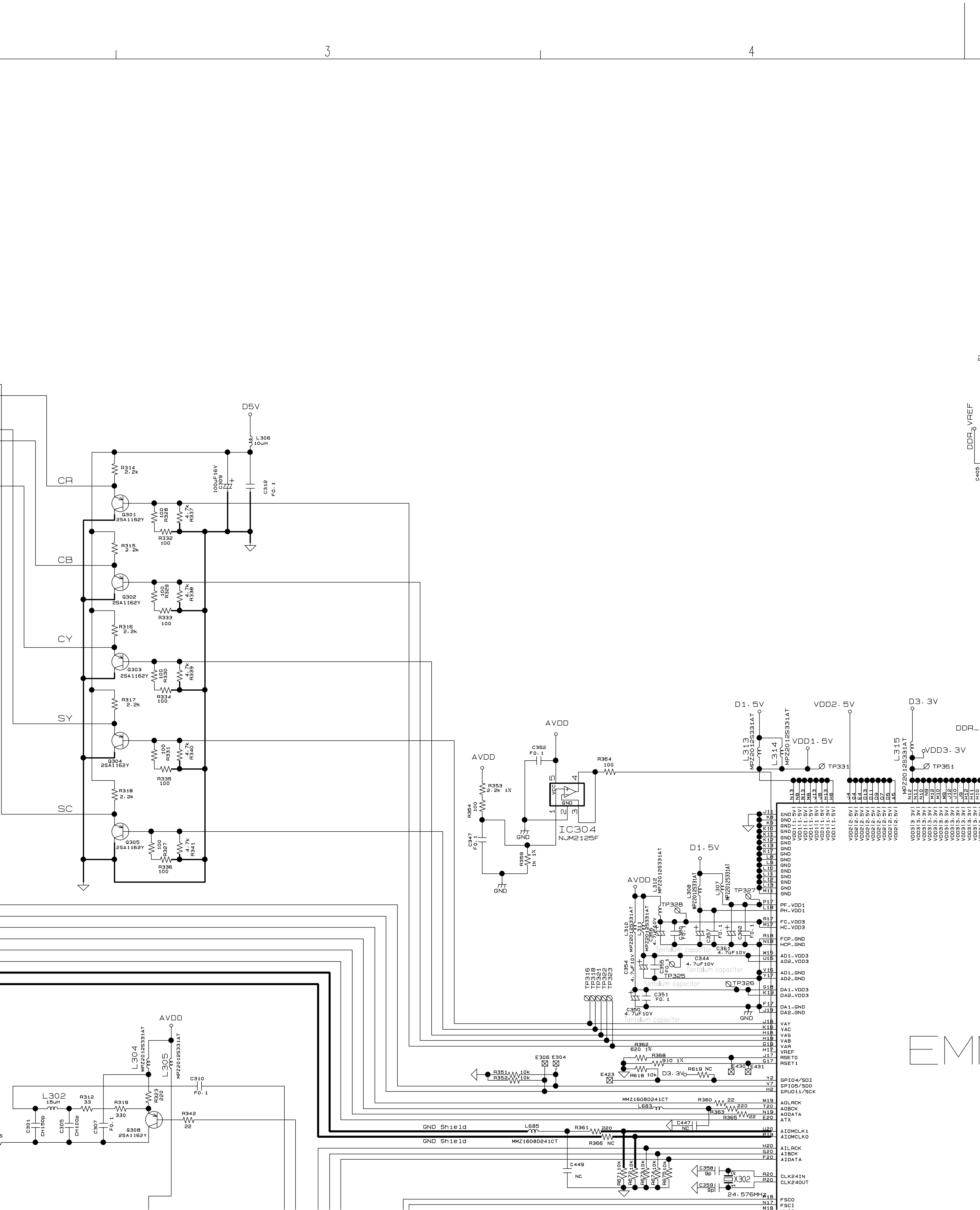


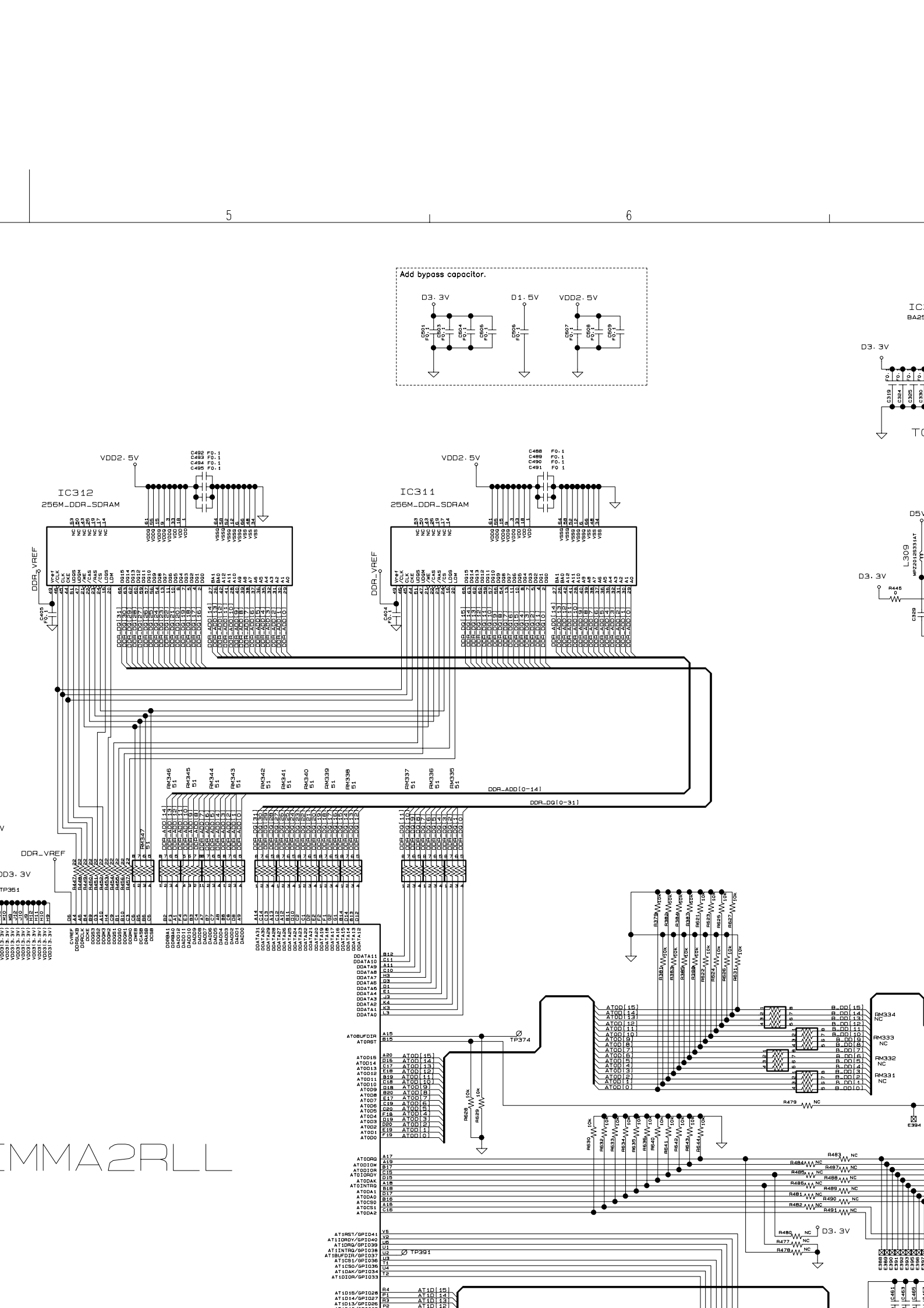
Fig. 3-4-6

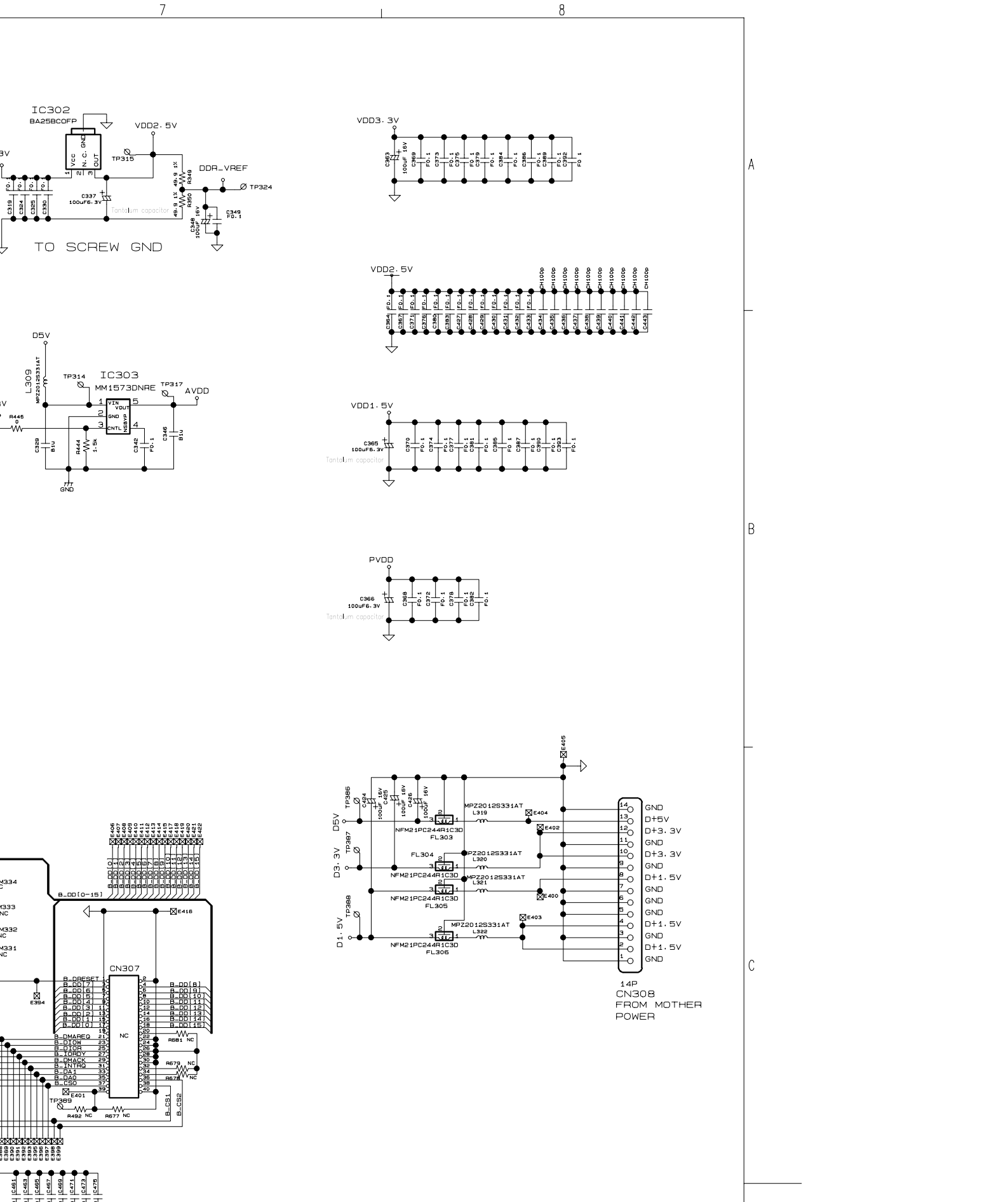
4-3. Digital Circuit Diagram

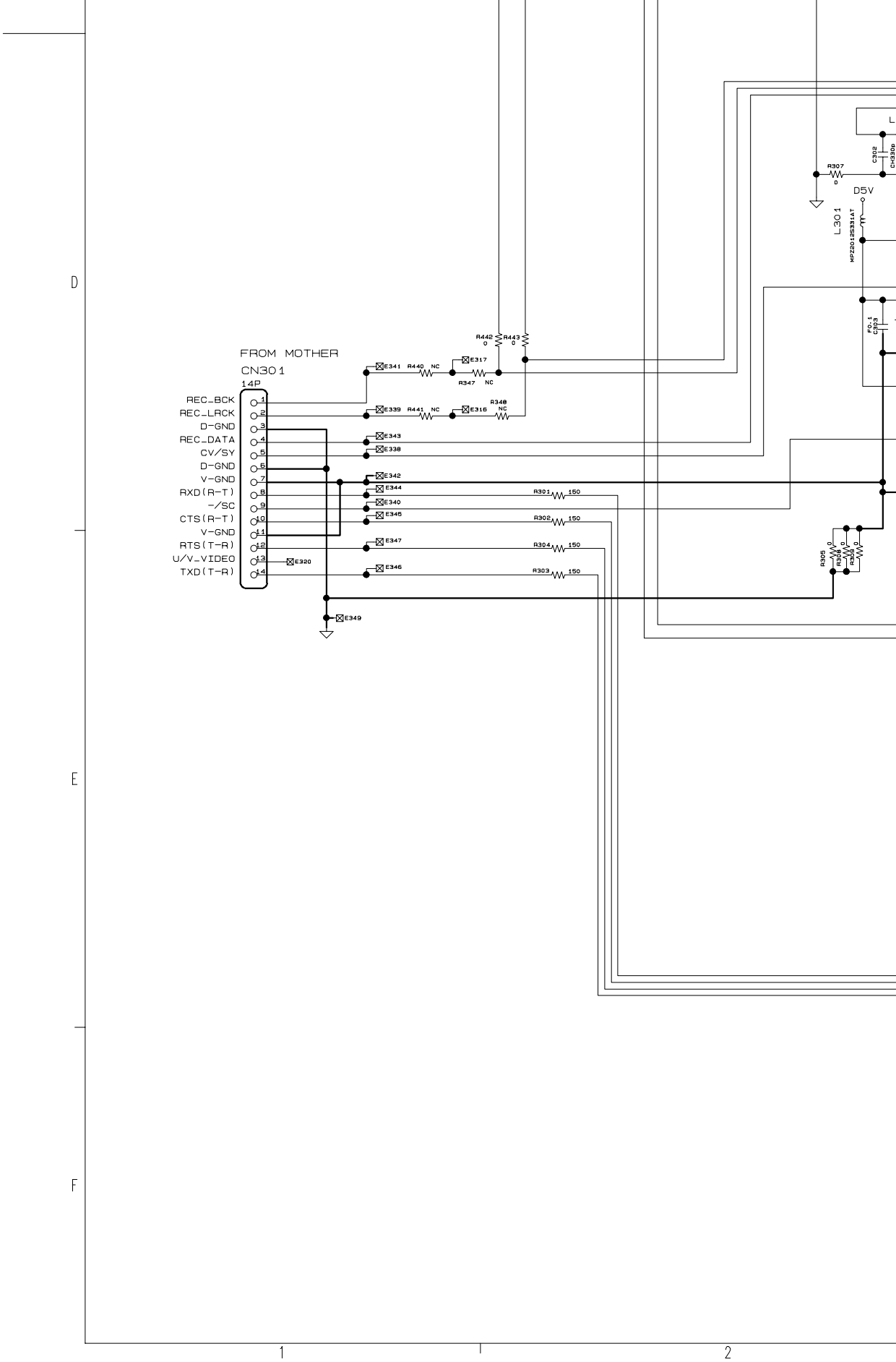


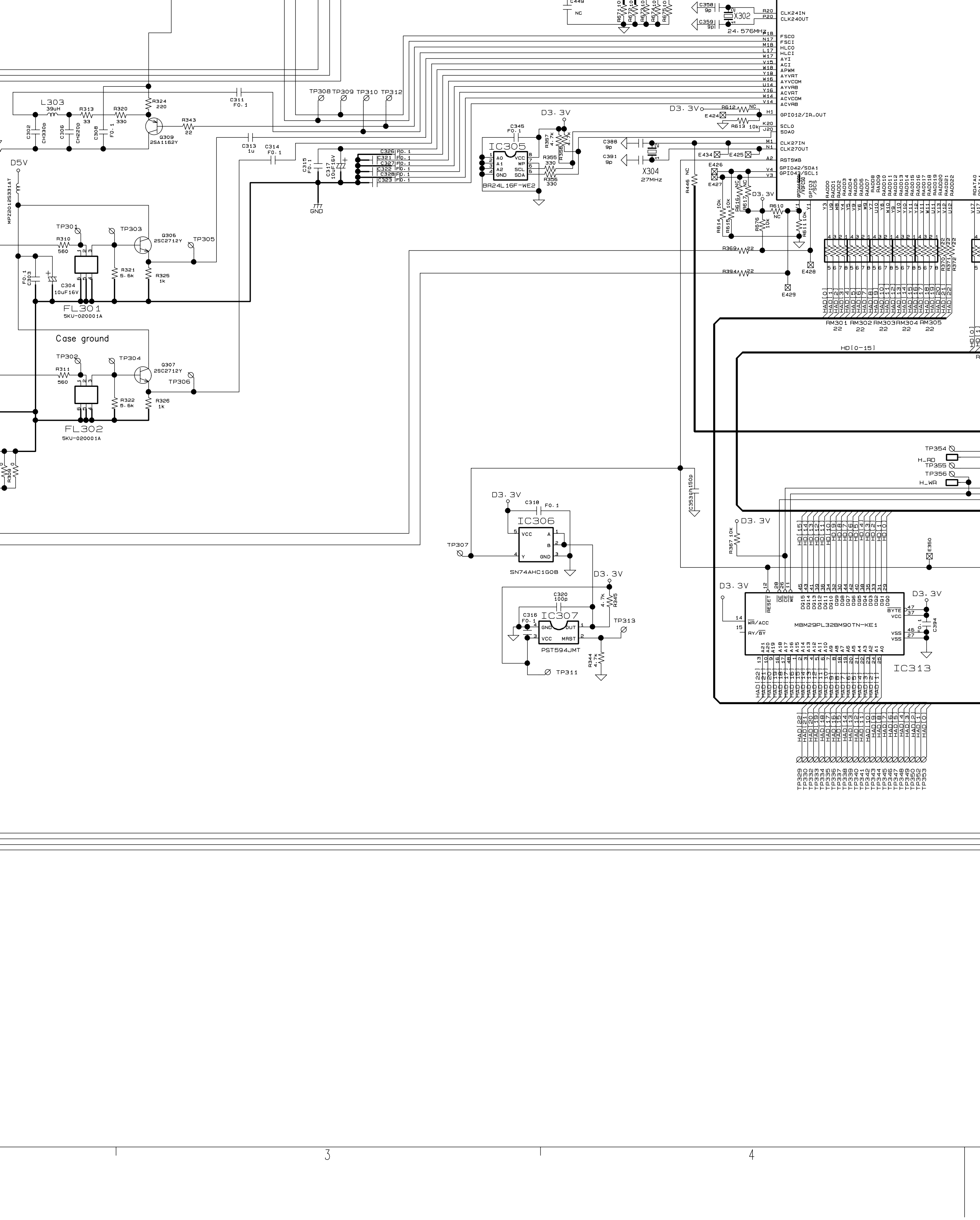


3
4
D5V
L306 10uH
C309 100uF16V
C312 F0.1
CR
CB
CY
SY
SC
R314 2.2k
R315 2.2k
R316 2.2k
R317 2.2k
R318 2.2k
Q301 2SA1162Y
Q302 2SA1162Y
Q303 2SA1162Y
Q304 2SA1162Y
Q305 2SA1162Y
R332 100
R333 100
R334 100
R335 100
R336 100
AVDD
C352 F0.1
R364 100
R353 2.2k 1%
R354 100
C347 F0.1
R359 1k 1%
GND
IC304
NJM2125F
D1.5V
VDD2.5V
D3.3V
VDD1.5V
VDD3.3V
TP331
TP351
L313
L314
L315
DDR_VREF
TP327
TP328
TP325
TP326
Tantalum capacitor
C344 4.7uF10V
C351 F0.1
C350 4.7uF10V
C354 4.7uF10V
PF_VDD1
PH_VDD1
FC_VDD3
HC_VDD3
FCP_GND
HCP_GND
AD1_VDD3
AD2_VDD3
AD1_GND
AD2_GND
DA1_VDD3
DA2_VDD3
DA1_GND
DA2_GND
VAY
VAC
VAG
VAB
VAR
VREF
RSET0
RSET1
R362 620 1%
R368 910 1%
R351 10k
R352 10k
R618 10k
R619 NC
E306 E304
E423
E430 E431
GPIO4/SDI
GPIO5/SDO
GPUO11/SCK
AOLRCK
AOBCK
AODATA
ATX
R360 22
R363 220
R365 22
MMZ1608D241CT
L683
L685
C447 NC
AIOMCLK1
AIOMCLKO
GND Shield
R361 220
R366 NC
AILRCK
AIBCK
AIDATA
C449 NC
C358 9p
C359 9p
X302
24.576MHz
CLK24IN
CLK24OUT
FSCO
FSCI
L302 15uH
R312 33
R319 330
R323 220
Q308 2SA1162Y
R342 22
C310 F0.1
C301 CH150p
C305 CH100p
C307 F0.1
L304
L305
MPZ2012S331AT
TP316 TP318 TP321 TP322 TP323

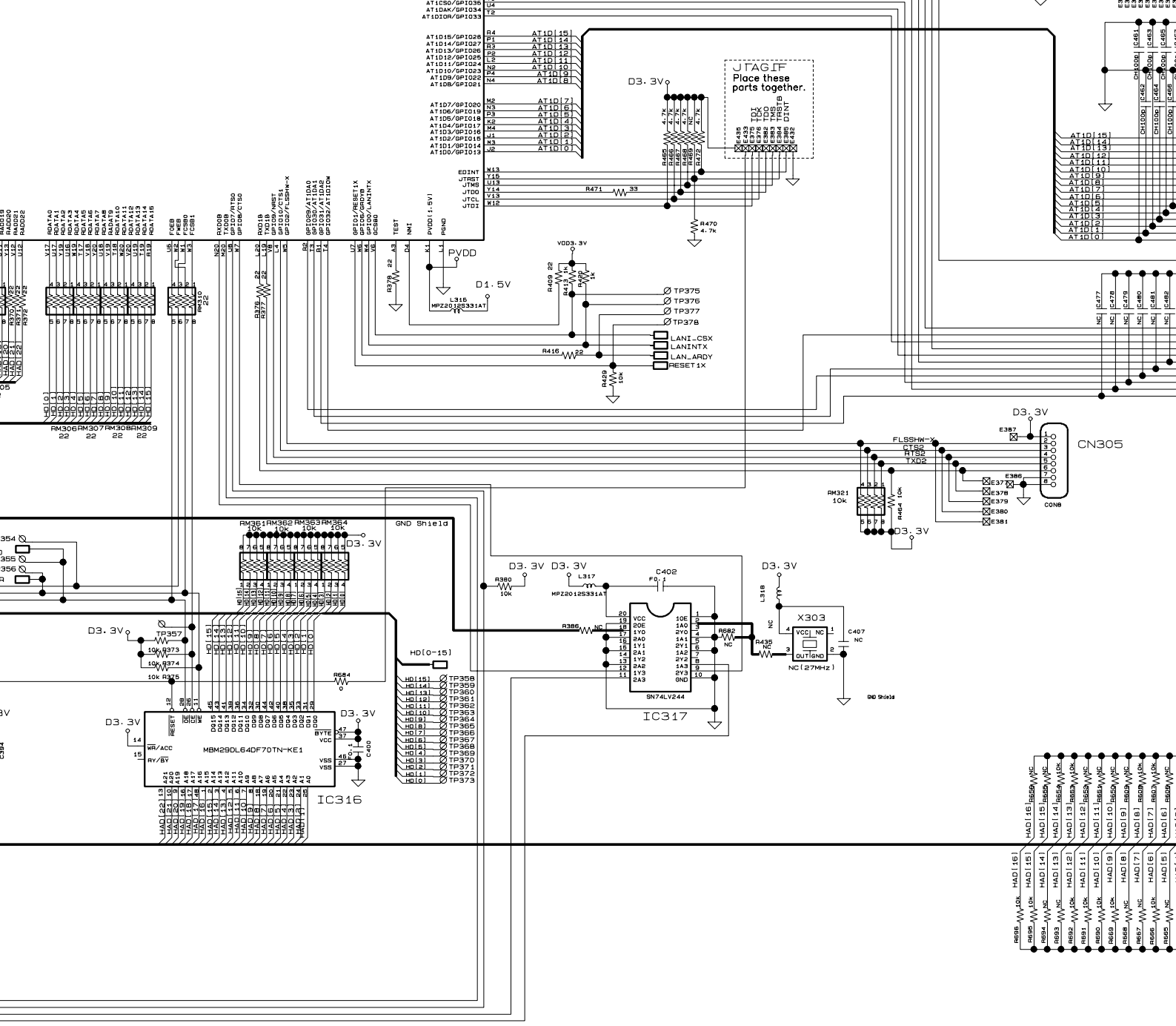

5
6
Add bypass capacitor.
D3.3V
D1.5V
VDD2.5V
IC312
256M_DDR_SDRAM
IC311
256M_DDR_SDRAM
DDR_VREF
DDR_ADD[0-14]
DDR_DQ[0-31]
ATOD[15]
ATOD[14]
ATOD[13]
ATOD[12]
ATOD[11]
ATOD[10]
ATOD[9]
ATOD[8]
ATOD[7]
ATOD[6]
ATOD[5]
ATOD[4]
ATOD[3]
ATOD[2]
ATOD[1]
ATOD[0]
TP374
TP391
L309
EMMA2RLL


7
8
A
B
C
IC302
BA25BC0FP
VDD2.5V
TP315
DDR_VREF
TP324
TO SCREW GND
VDD3.3V
VDD2.5V
D5V
L309
IC303
MM1573DNRE
TP314
TP317
AVDD
GND
VDD1.5V
PVDD
B_DD[0-15]
CN307
NC
E416
E394
E401
TP389
E405
TP386
TP387
TP388
D5V
D3.3V
D1.5V
MPZ2012S331AT
NFM21PC244R1C3D
FL303
FL304
FL305
L319
L320
L321
L322
E404
E402
E400
E403
GND
D+5V
D+3.3V
D+1.5V
14P
CN308
FROM MOTHER
POWER


FROM MOTHER
CN301
14P
REC_BCK
REC_LRCK
D-GND
REC_DATA
CV/SY
D-GND
V-GND
RXD(R-T)
-/SC
CTS(R-T)
V-GND
RTS(T-R)
U/V_VIDEO
TXD(T-R)
R442 0
R443 0
E341
R440 NC
E317
R347 NC
E339
R441 NC
E316
R348 NC
E343
E338
E342
E344
E340
E345
E347
E320
E346
E349
R301 150
R302 150
R304 150
R303 150
R307 0
D5V
L301
C302
C303
R305 0
R306 0
R308 0



L303
39uH
R313
33
R320
330
R324
220
Q309
2SA1162Y
R343
22
C311
F0.1
C302
CH330p
C306
CH220p
C308
F0.1
D5V
MPZ2012S331AT
TP301
TP303
R310
560
Q306
2SC2712Y
TP305
R321
5.6k
R325
1k
C303
F0.1
C304
10uF16V
FL301
5KU-020001A
Case ground
TP302
TP304
R311
560
Q307
2SC2712Y
TP306
R322
5.6k
R326
1k
FL302
5KU-020001A
TP308
TP309
TP310
TP312
C313
1u
C314
F0.1
C315
F0.1
C317
10uF16V
GND
C326
C321
C327
C322
C328
C323
C345
F0.1
IC305
BR24L16F-WE2
R357
4.7k
R358
4.7k
R355
330
R356
330
D3.3V
C388
9p
C391
9p
X304
27MHz
C358
9p
C359
9p
X302
24.576MHz
C449
NC
CLK24IN
CLK24OUT
FSCO
FSCI
HLCO
HLCI
AYI
ACI
APWM
AYVRT
AYVCOM
AYVRB
ACVRT
ACVCOM
ACVRB
GPIO12/IR_OUT
SCL0
SDA0
CLK27IN
CLK27OUT
RSTSWB
GPIO42/SDA1
GPIO43/SCL1
R612
NC
R613
10k
E424
E434
E425
E426
E427
R446
NC
R614
10k
R615
10k
R616
NC
R617
NC
R676
10k
R610
NC
R611
10k
R369
22
R394
22
E428
E429
RM301
RM302
RM303
RM304
RM305
22
HD[0-15]
TP354
H_RD
TP355
TP356
H_WR
C353
CH150p
TP307
D3.3V
C318
F0.1
IC306
SN74AHC1G08
C320
100p
C316
F0.1
IC307
PST594JMT
R345
4.7k
R344
4.7k
TP313
TP311
R367
10k
E350
RESET
OE
CE
WE
WR/ACC
RY/BY
BYTE
VCC
VSS
MBM29PL32BM90TN-KE1
IC313
C394
F0.1
3
4


JTAGIF
Place these parts together.
TDI
TDO
TMS
TRSTB
DINT
D3.3V
PVDD
D1.5V
VDD3.3V
LANI_CSX
LANINTX
LAN_ARDY
RESET1X
CN305
CON8
FLSSHW->
RTS2
RTS0
TXD2
X303
NC(27MHz)
IC316
MBM29DL64DF70TN-KE1
IC317
SN74LV244
GND Shield
HD[0-15]

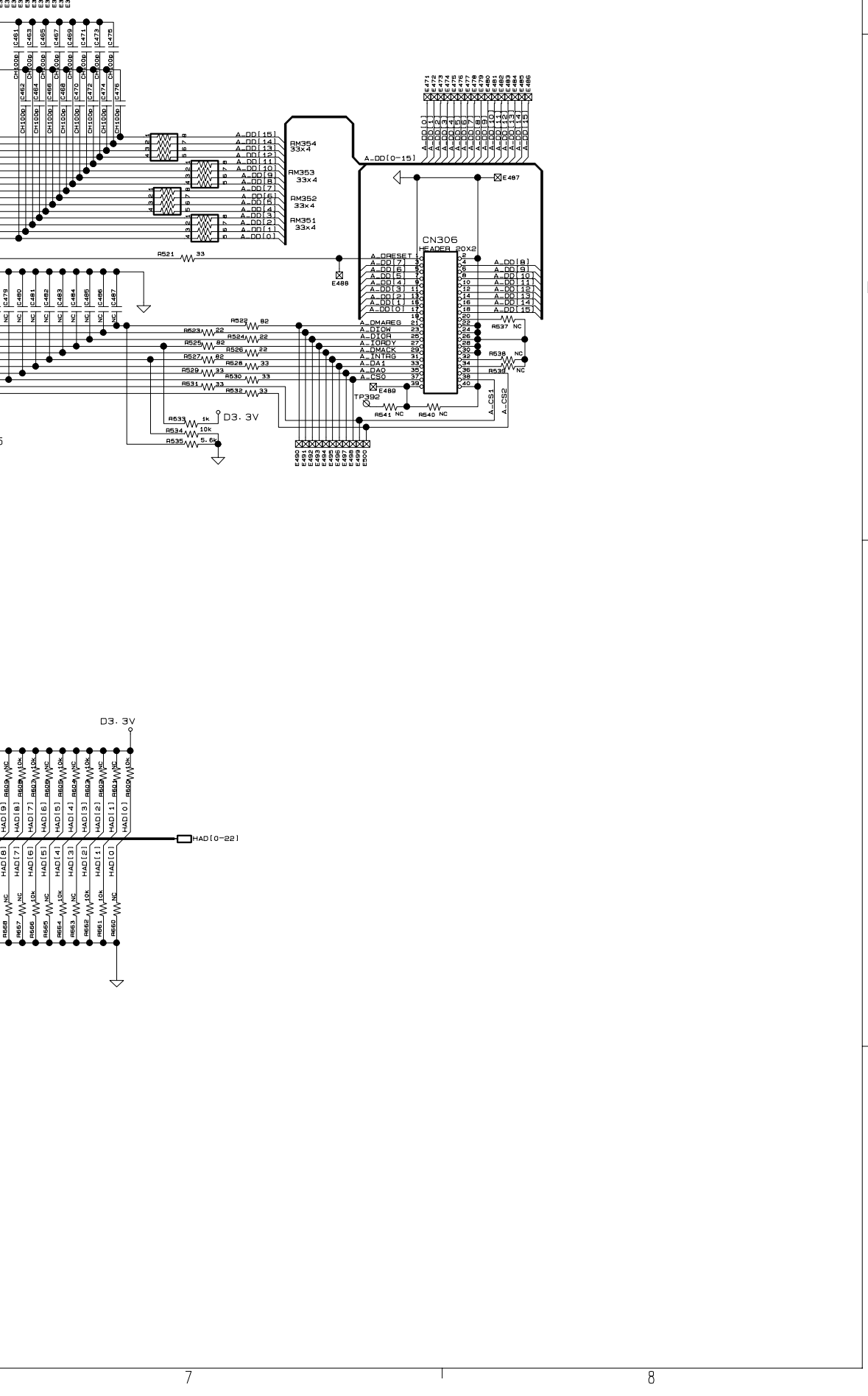
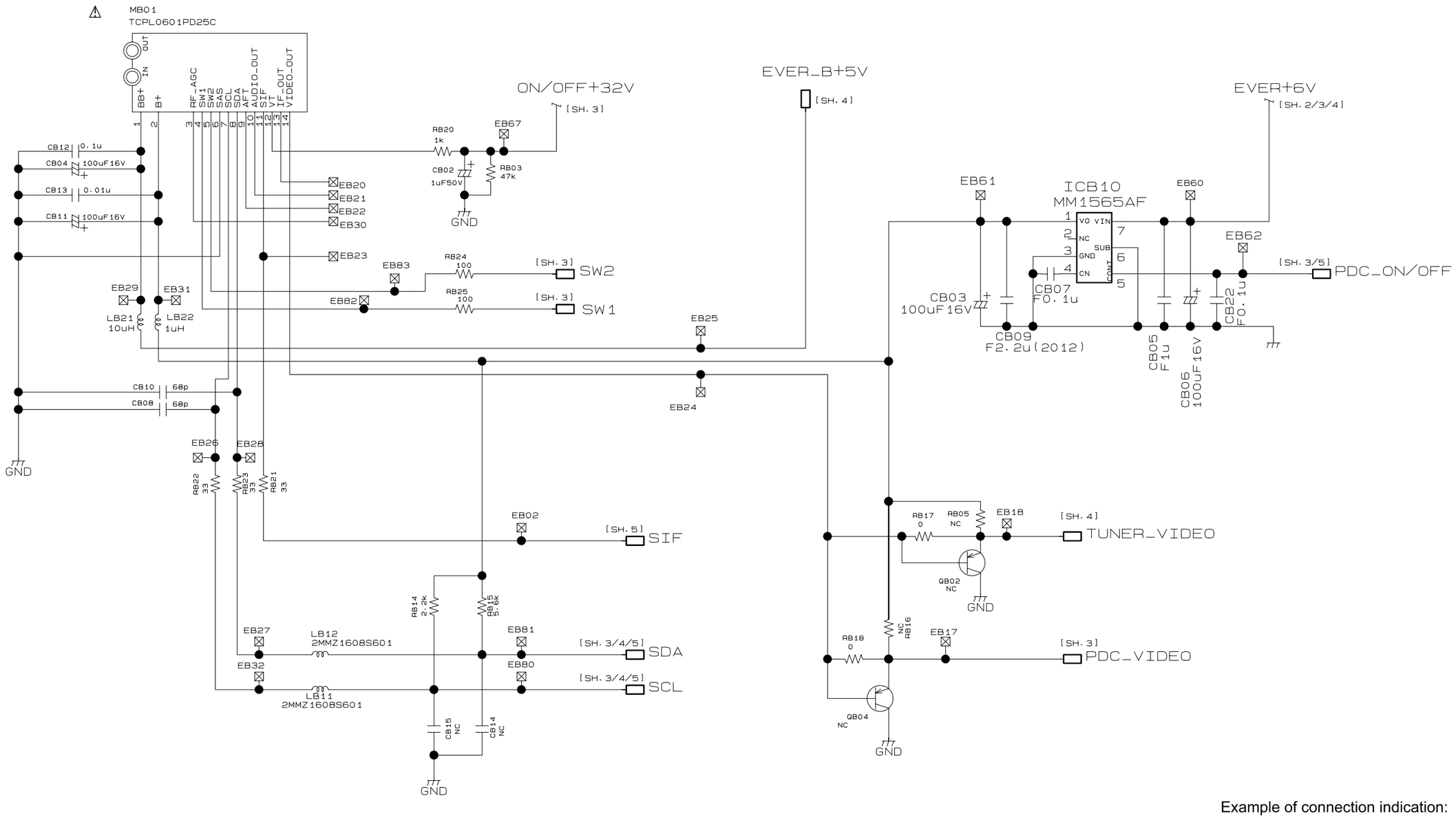

A_DD[15]
A_DD[14]
A_DD[13]
A_DD[12]
A_DD[11]
A_DD[10]
A_DD[9]
A_DD[8]
A_DD[7]
A_DD[6]
A_DD[5]
A_DD[4]
A_DD[3]
A_DD[2]
A_DD[1]
A_DD[0]
RM354 33x4
RM353 33x4
RM352 33x4
RM351 33x4
A_DD[0-15]
E487
CN306
HEADER 20X2
A_DRESET
A_DMAREG
A_DIOW
A_DIOR
A_IORDY
A_DMACK
A_INTRG
A_DA1
A_DA0
A_CS0
A_CS1
A_CS2
R521 33
E488
R522 82
R623 22
R524 22
R525 82
R526 22
R527 82
R528 33
R529 33
R530 33
R531 33
R532 33
R537 NC
R538 NC
R539 NC
E489
TP392
R541 NC
R540 NC
R533 1k
R534 10k
R535 5.6k
D3.3V
HAD[0-22]
HAD[0]
HAD[1]
HAD[2]
HAD[3]
HAD[4]
HAD[5]
HAD[6]
HAD[7]
HAD[8]
HAD[9]
HAD[10]
HAD[11]
HAD[12]
HAD[13]
HAD[14]
HAD[15]

Fig. 3-4-6

4-4. Mother Circuit Diagram

4-4-1. Tuner Interface Circuit Diagram [SH.1]



Example of connection indication:

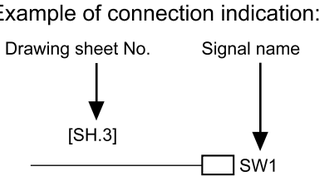


Fig. 3-4-7

4-4-2. Audio Circuit Diagram [SH.2]

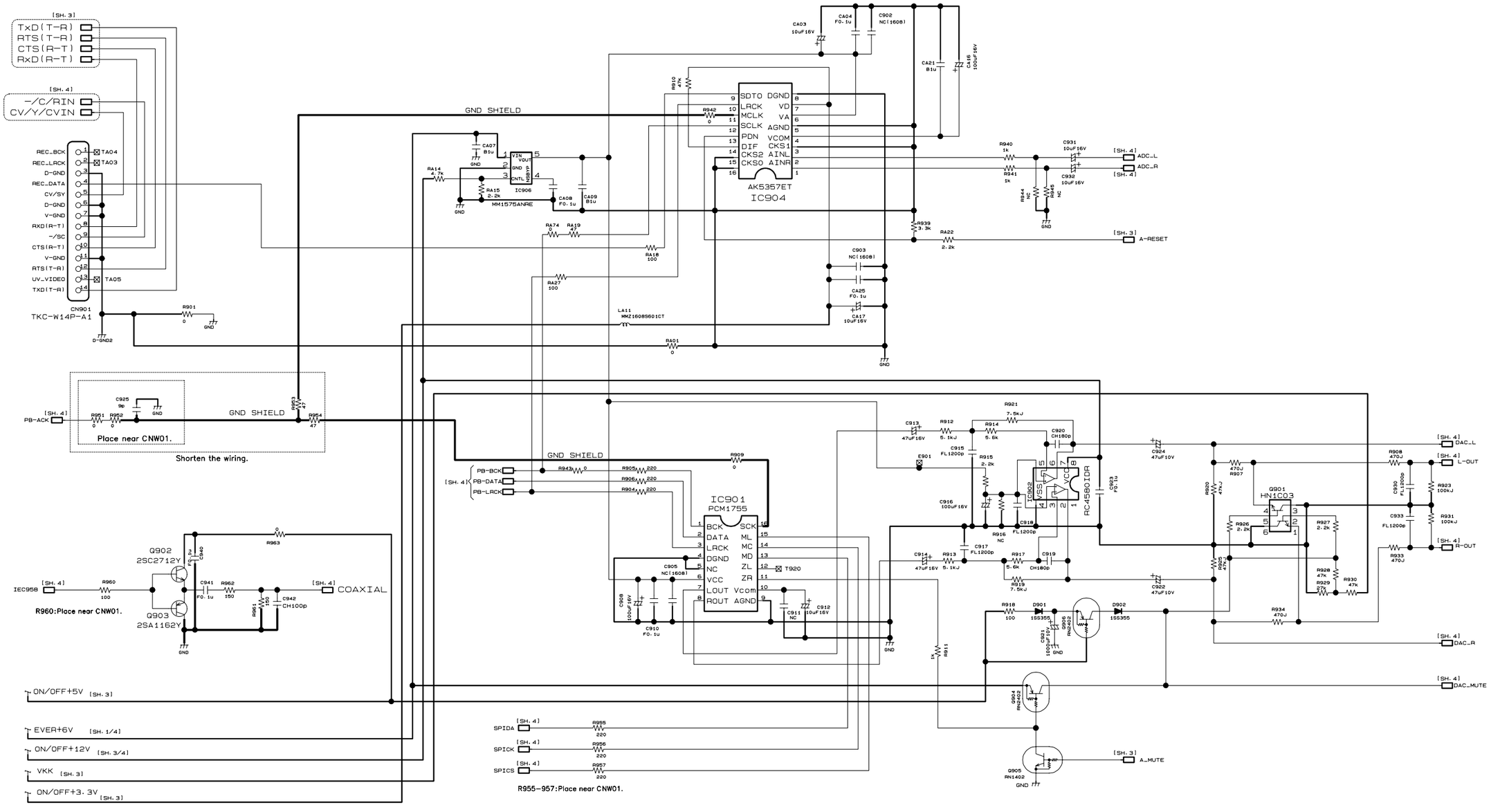


Fig. 3-4-8

4-4-3. Timer Circuit Diagram [SH.3]

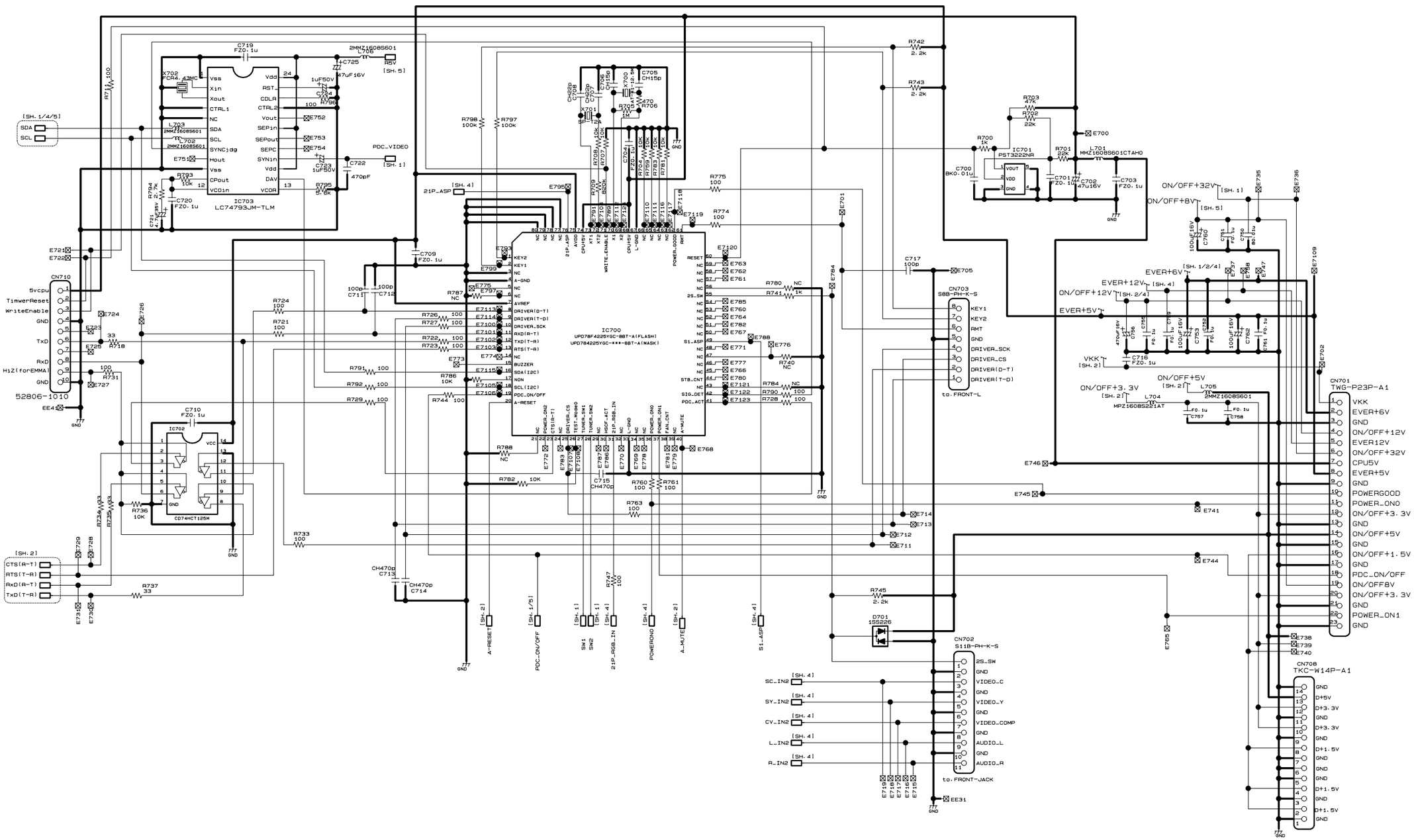


Fig. 3-4-9

4-4-4. Video Circuit Diagram [SH.4]

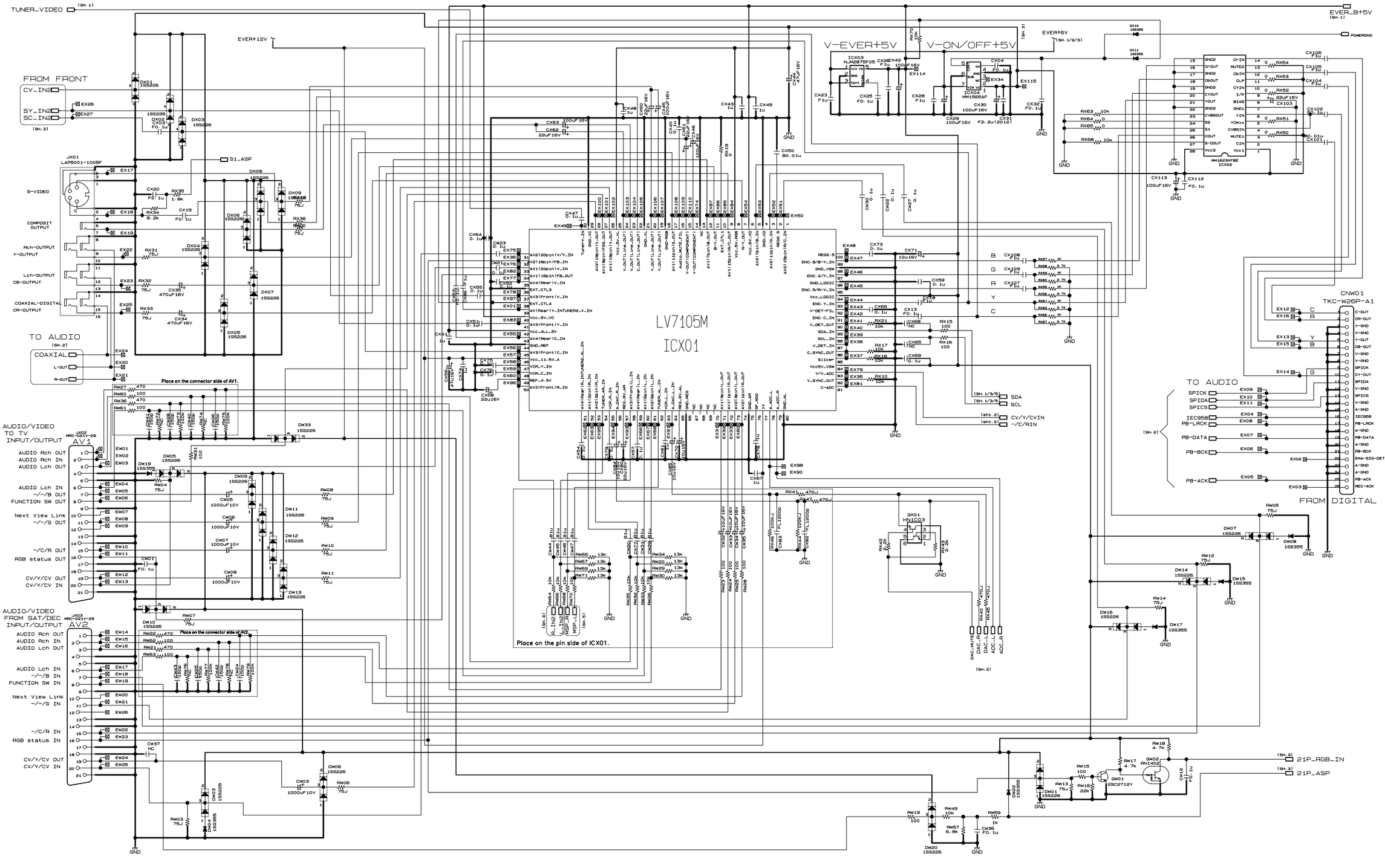


Fig. 3-4-10

4-4-5. MSP Circuit Diagram [SH.5]

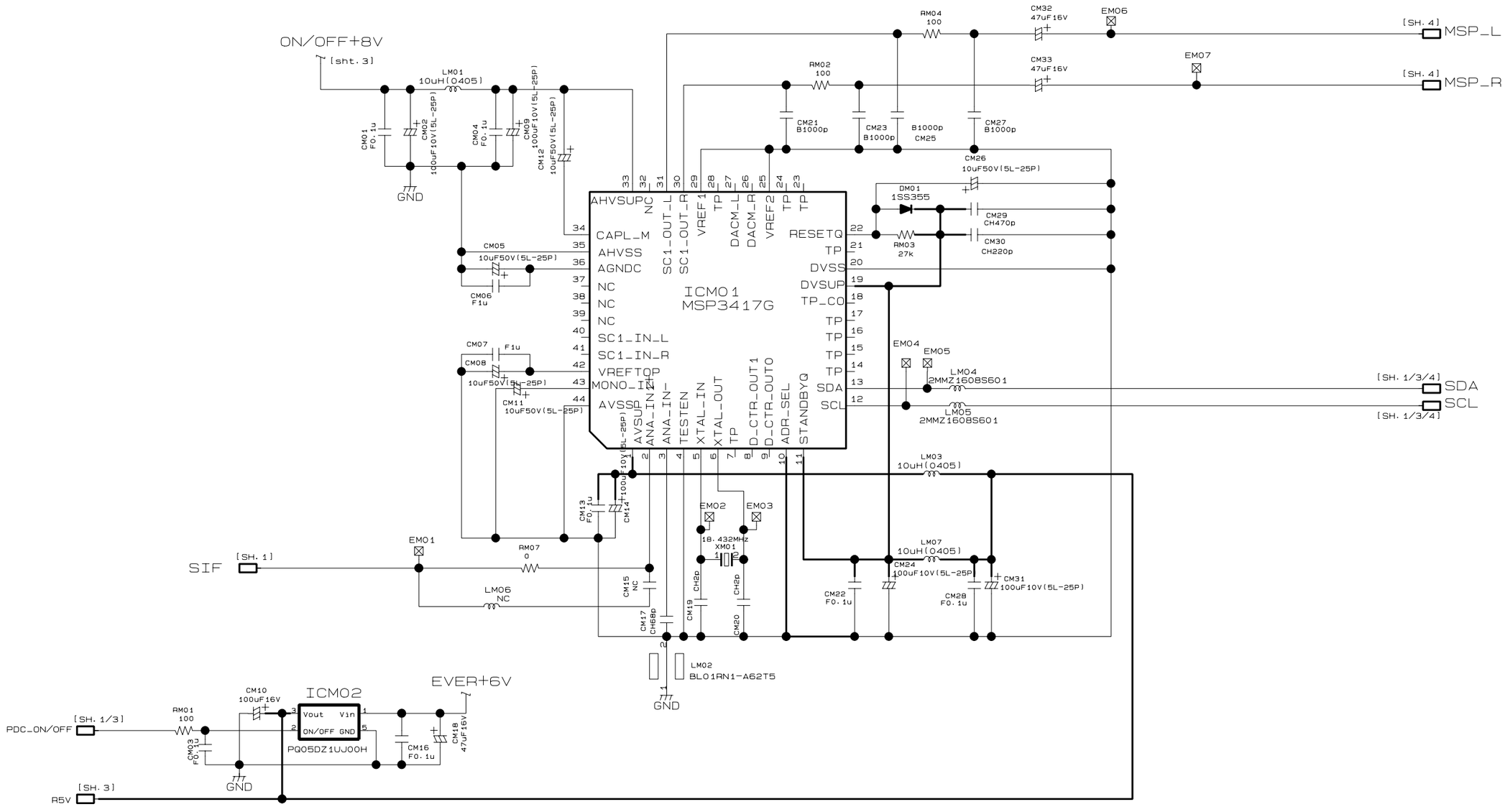


Fig. 3-4-11

5. PC BOARDS

5-1. Power Supply PC Board

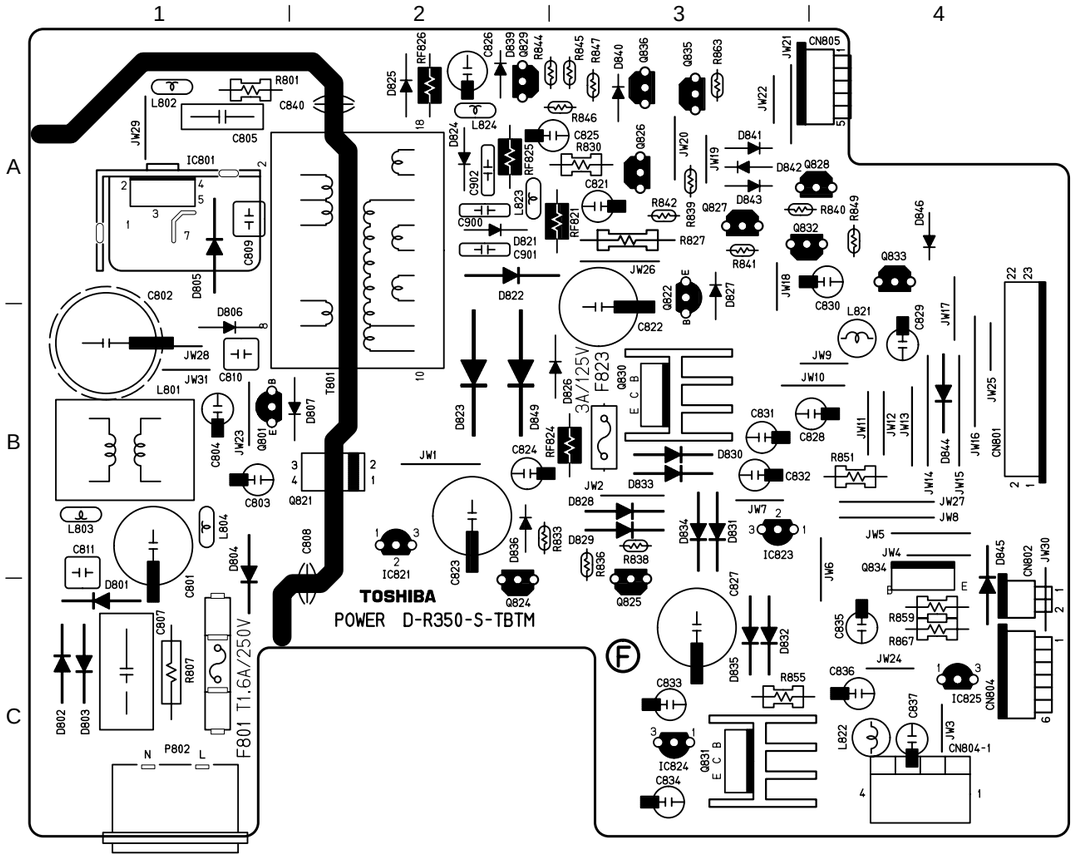


Fig. 3-5-1 EU02 Power Supply PC Board (Top side)

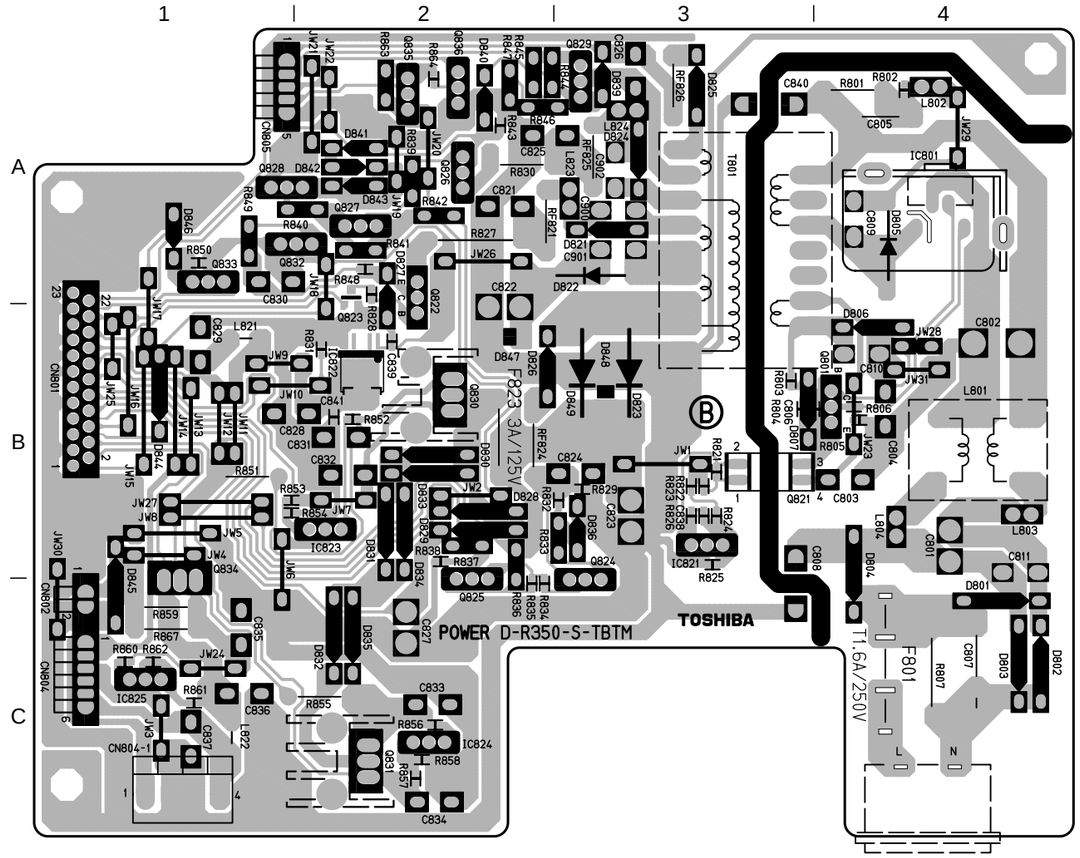


Fig. 3-5-2 EU02 Power Supply PC Board (Bottom side)

5-2. Front Jack PC Board

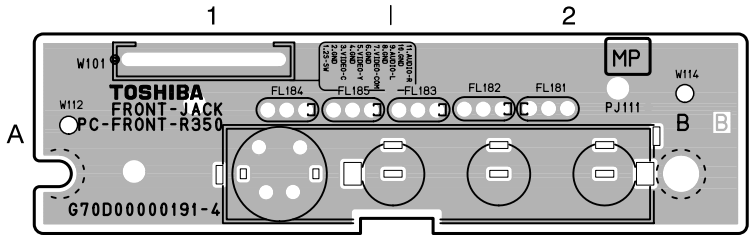


Fig. 3-5-3 EU55 Front Jack PC Broad (Top side)

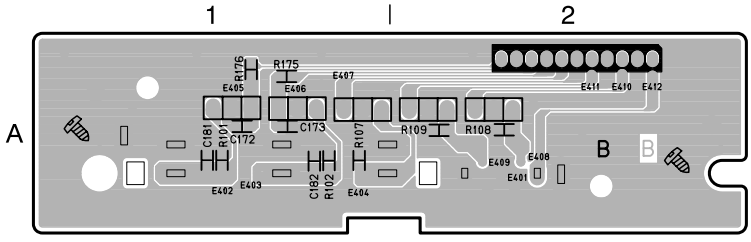


Fig. 3-5-4 EU55 Front Jack PC Broad (Bottom side)

5-3. Front (L) PC Board

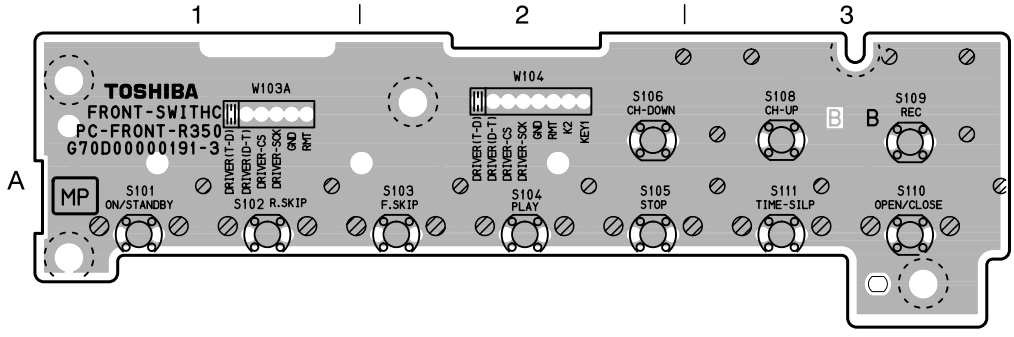


Fig. 3-5-5 EU03B Front (L) PC Broad (Top side)

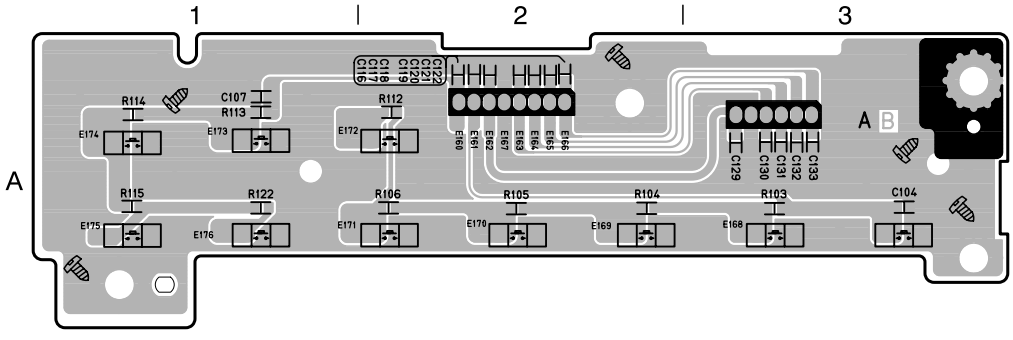


Fig. 3-5-6 EU03B Front (L) PC Broad (Bottom side)

5-4. Front (R) PC Board

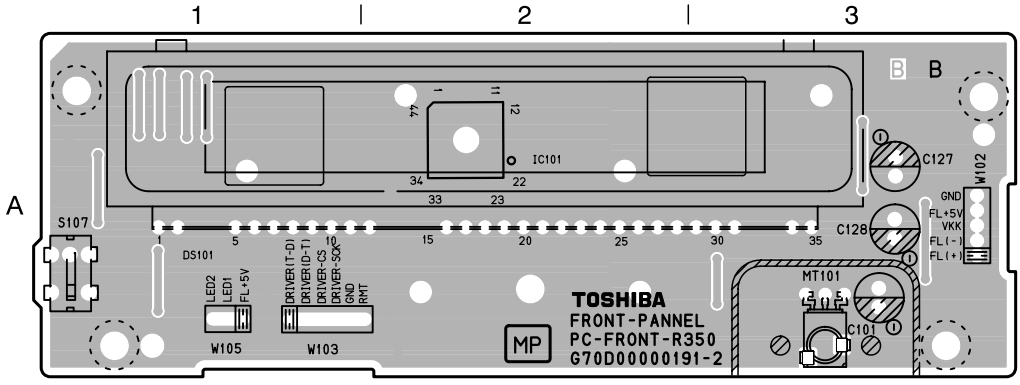


Fig. 3-5-7 EU03A Front (R) PC Broad (Top side)

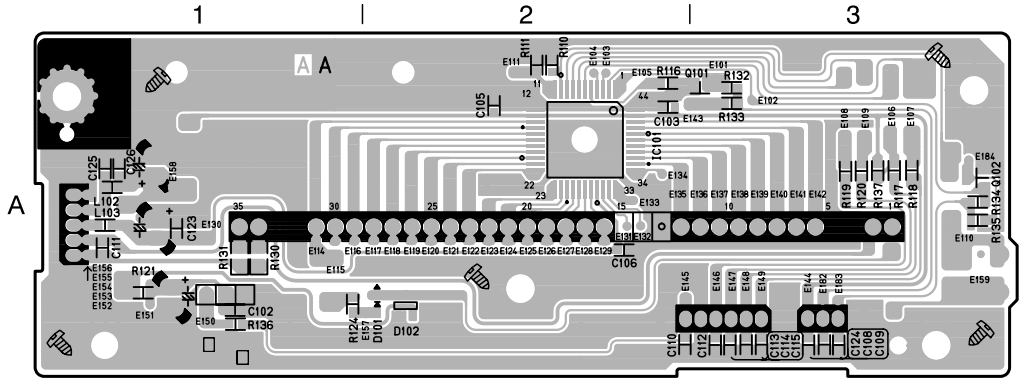


Fig. 3-5-8 EU03A Front (R) PC Broad (Bottom side)

5-5. Front LED PC Board

Fig. 3-5-9 EU56 Front LED PC Broad (Top side)

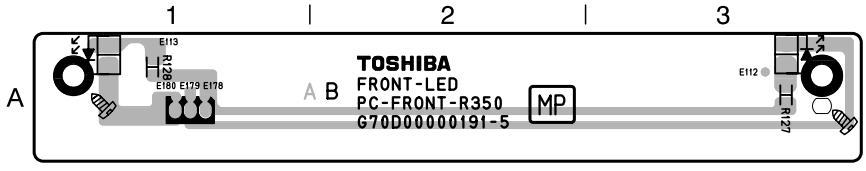


Fig. 3-5-10 EU56 Front LED PC Broad (Bottom side)

5-6. Digital PC Board

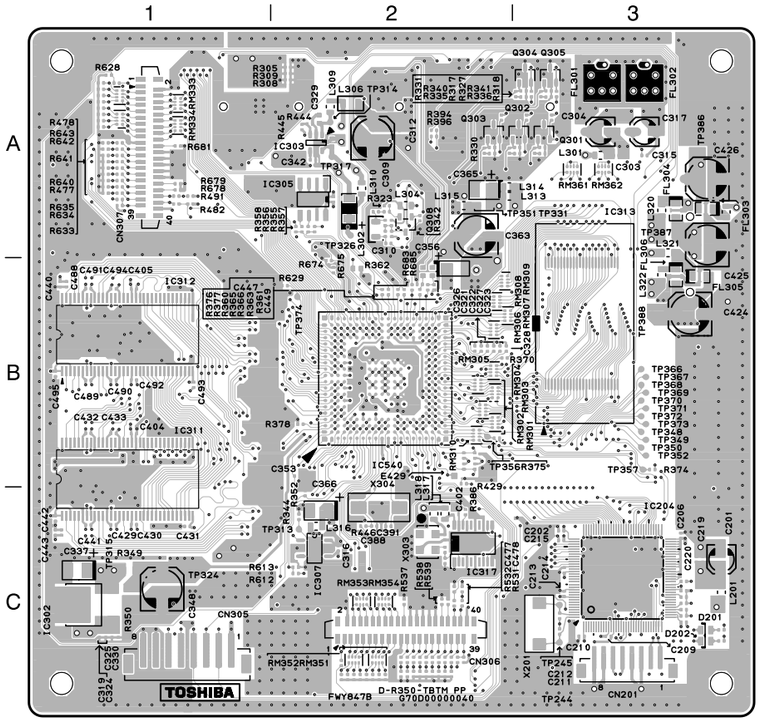


Fig. 3-5-11 EU01 Digital PC Board (Top side)

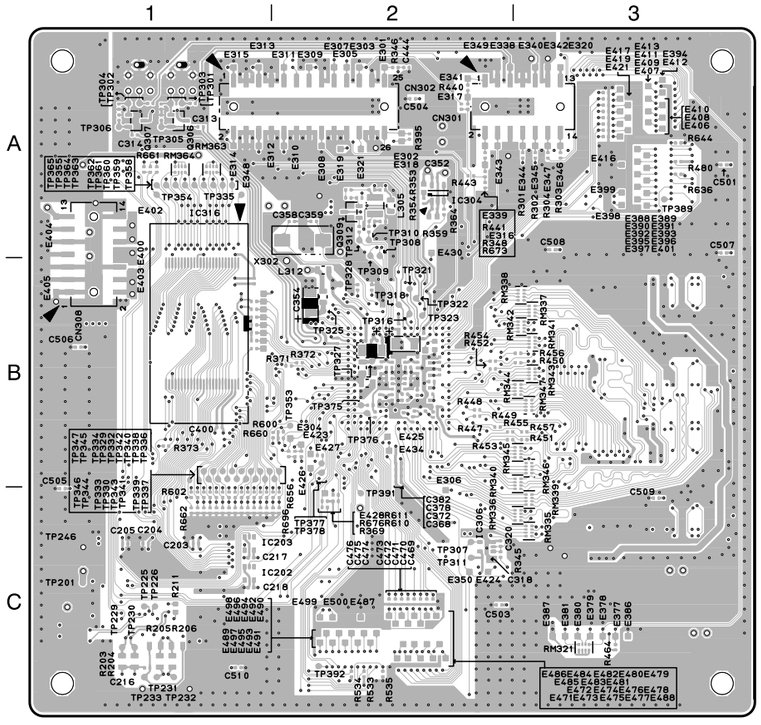


Fig. 3-5-12 EU01 Digital PC Board (Bottom side)

5-7. Mother PC Board

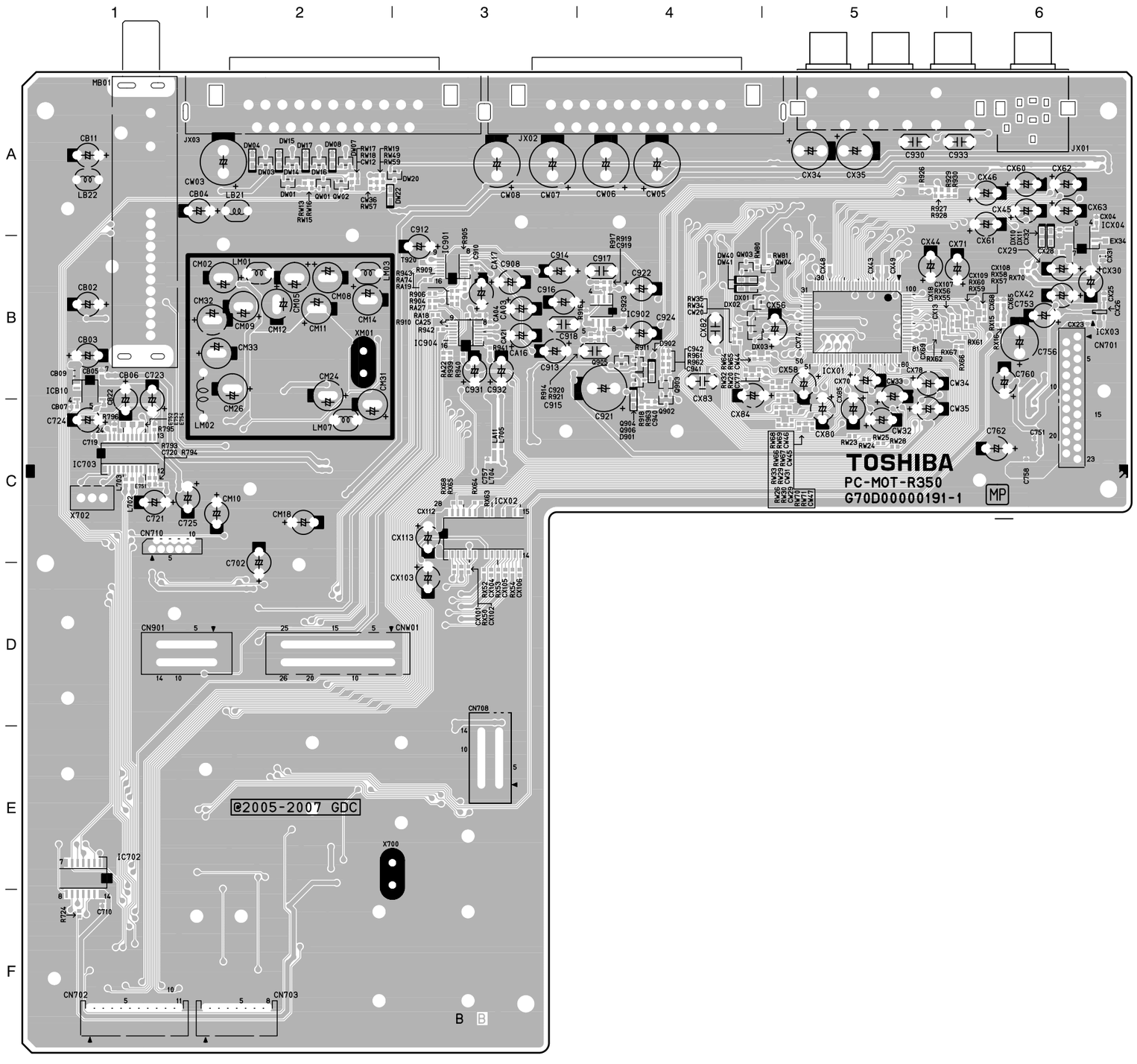


Fig. 3-5-13 EU05 Mother PC Board (Top side)